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Interaction of budget emphasis, budgeting participation and task characteristics : a cross-cultural study

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**INTERACTION OF BUDGET EMPHASIS, BUDGETARY
PARTICIPATION AND TASK CHARACTERISTICS:
A CROSS-CULTURAL STUDY**

BY

LIANG CHOO LOW

**A Thesis Submitted in Partial Fulfilment of the
Requirements for the Award of**

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at the Faculty of Business, Edith Cowan University

Date of Submission: 20. 11. 93

USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

Abstract

This thesis is an empirical examination which links two important areas of management accounting research. The first area relates to the relation between superiors' evaluative styles and the two dependent variables of job related tension and managerial performance. The second area relates to the impact of culture on management accounting system.

Two of Hofstede's (1980) dimensions of culture were used in this study. They were power distance and individualism. Two studies, Brownell and Hirst (1986) and Brownell and Dunk (1991), both of which were conducted with samples from a low power distance/high individualism nation were re-examined within the framework suggested by Harrison (1992) that research results related to budgetary participation can be generalized between high power distance/low individualism and low power distance/high individualism nations.

Multiple linear regressions were used to test the three-way interaction between budget emphasis, budgetary participation and task characteristics (task uncertainty, task variability or task difficulty), affecting each of the two dependent variables of managerial performance and job related tension. A four-way interaction between budget emphasis, budgetary participation, task difficulty and culture was also tested.

A questionnaire was administered to a sample of 410 functional heads from 142 manufacturing companies located in Singapore and Western Australia. Singapore was selected as a surrogate for a high power distance/low individualism culture and Western Australia as a surrogate for a low power distance/high individualism culture.

The results of the study lend support to the existence of a three-way interaction affecting managerial performance in the case of task difficulty (Van de Ven & Delbecq, 1974) but not in

the results of Brownell and Hirst (1986) and Brownell and Dunk (1991). No significant three-way interaction between the independent variables affecting job related tension was found. Furthermore, the absence of any four-way significant interaction between budget emphasis, budgetary participation, task difficulty and culture affecting managerial performance provide strong support for Harrison's (1992) hypotheses that research results on budgetary participation can be generalized between nations with high power distance/low individualism culture and nations with low power distance/high individualism culture.

DECLARATION

"I certify that this thesis does not incorporate, without acknowledgment, any material previously submitted for a degree or diploma in any institution of higher education and that, to the best of my knowledge and belief, it does not contain any material previously published or written by another person except where due reference is made in the text".

Signature...../.....

Date.....25 - 2 - 94.....

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CHAPTER 1

Introduction

Motivation for the Study

Over the last two decades, two important areas of research in management accounting have emerged. The first area relates to work concerning the relationship between the performance evaluation styles used by higher level management (superiors) to appraise lower level managements (subordinates') job performance, attitudes and behavioural consequences (Brownell, 1982; Brownell & Dunk, 1991; Brownell & Hirst, 1986; Hirst, 1983; Hopwood, 1972). The second area relates to work concerning the effect of national culture on management accounting systems (Alder, 1984; Chow, Shield & Chan, 1991; Frucot & Shearon, 1991; Harrison, 1990, 1992, 1993; Hofstede, 1983; Hwang, 1989).

The evaluation styles of a superior may vary in terms of where previously agreed budget data are used rigidly in evaluating subordinates' performance to where budget data is not important at all in the assessment of subordinates' performance (Hopwood, 1972). These styles are referred to as high or low budget emphasis or as high or low reliance on accounting performance measures (Harrison, 1990). Although superiors' evaluative styles have been the focus of much research effort (Brownell, 1982; Brownell & Dunk, 1991; Brownell & Hirst, 1986; Hirst, 1983; Hopwood; 1972) this area of research is also characterized by conflicting and contradicting results.

Much of the early work on the relationship between superiors' performance evaluative styles and subordinates' attitudes and job performance has been directed towards reconciling the

by Hopwood (1972) found that an evaluative style dominated by a heavy reliance on accounting performance measures or high budget emphasis had adverse effects on subordinates' job related tension, poorer relations with both superiors and peers and higher incidence of dysfunctional behaviour, such as falsifying accounting records. These results led Hopwood to suggest that evaluation styles focusing on accounting measures or a higher emphasis on budgets would have a negative effect on managerial performance. However, Otley (1978) failed to replicate Hopwood's findings. In contrast, his results suggested that a heavy emphasis on accounting performance measures is not associated with higher job related tension or lower managerial performance.

Subsequent researchers attempted to reconcile these conflicting results by examining the roles of various contingency factors that may have influenced the models used by Hopwood and Otley. Hirst (1981, 1983) and Imoisili (1989) considered the moderating effects of task uncertainty; Govindarajan (1984) examined environmental uncertainty; Brownell (1982), Hirst (1987) and Dunk (1989) studied budgetary participation; Brownell and Hirst (1986) and Brownell and Dunk (1991) considered budgetary participation and task uncertainty; Brownell (1985, 1987) considered budgetary participation and environmental uncertainty; Govindarajan and Gupta (1985) examined business unit strategy; and Brownell and Merchant (1987) considered technology.

The role of budgetary participation alone and both budgetary participation and task characteristics together in moderating the effects of budget emphasis have been an important focus of much research effort. The two-way interactive effect between budgetary participation and budget emphasis affecting managerial performance has been examined in a number of studies (e.g., Brownell, 1982; Brownell & Dunk 1991, Brownell & Hirst, 1986; Dunk, 1989; Hirst, 1987). The results from these studies have shown that compatible combinations of high (low) budgetary participation together with high (low) budget emphasis ranged from enhancing

on managerial performance (Brownell & Hirst, 1986; Hirst, 1987) or even reducing managerial performance (Dunk, 1989). The three-way interactive effect between budgetary participation, task characteristic and budget emphasis was examined by both Brownell and Hirst (1986) and Brownell and Dunk (1991). Whilst Brownell and Dunk (1991) were able to find a significant three-way interaction effect affecting managerial performance, Brownell and Hirst (1986) were unable to find any similar significant three-way interaction. Hence despite the empirical rigour of examination on these areas, the research results were inconsistent and inconclusive.

The conflicting results could be due to non-random sampling. Hopwood (1972), Otley (1978), Brownell (1982), Brownell and Hirst (1986) and Hirst (1987) were all based on data sampled from a single firm. Otley (1978, p. 144) suggested that one possible explanation for the conflicting results between his study (1978) and that of Hopwood (1972) could be due to systematic differences between the organizations studied by them. Likewise, the inconsistent results in the above studies relating to the two-way interaction or three-way interaction between budget emphasis, budgetary participation and task characteristics could also be explained by the systematic differences in the organizations studied in each case.

Brownell and Dunk (1991) suggested that the weaknesses of Brownell and Hirst's (1986) study included not only an inappropriate sampling procedures, but also an inappropriate measurement of the task characteristics variable. They argued that as Brownell and Hirst's sample of respondents was from a single firm, their study failed to identify discrete work-units which were considered as the appropriate level of analysis in the assessment of task characteristics. Brownell and Dunk also argued that the Van de Ven and Delbecq (1974) instrument of task difficulty was the more appropriate instrument for measuring task characteristics compared with the Withey et al. (1983) instrument used by Brownell and Hirst (1986). Brownell and Dunk (1991) however, in replicating Brownell and Hirst's (1986) study, varied both the sampling method and the task characteristic measurement instruments. As a

those of Brownell and Hirst's (1986) study were due to the measurement of task characteristics or sampling procedures. Besides, there were also other reservations on the measurement of managerial performance in the Brownell and Hirst's (1986) study. First of all the R-square of regressing the overall rating of managerial performance on the eight subdimensions of managerial performance in that study was only 0.35 which is substantially below the 0.55 suggested by Mahoney, Jerdee, and Carroll (1963, 1965) whose instrument was used by Brownell and Hirst (1986) to measure managerial performance. Secondly, while the Brownell and Hirst's (1986) study was unable to find any significant three-way interaction affecting managerial performance, the study found a significant three-way interaction between the independent variables affecting job related tension. This suggests that the results of the study on managerial performance based on the Withey et al. (1983) instrument justify further investigation.

Given the wide range of results in prior research studies, the need for a reexamination of both Brownell and Hirst's (1986) and Brownell and Dunk's (1991) studies to resolve their conflicting results, provides the first important motivation of this study.

The second important area of management accounting included in this study relates to the effect of national culture on management accounting systems. Increased attention has recently been directed towards this second area of research (Alder, 1984; Chow et al., 1991; Frucot & Shearon, 1991; Harrison, 1990, 1992, 1993; Hofstede, 1983; Hwang, 1989).

Whilst the aforementioned area of research on superiors' evaluative style was based on samples derived mostly from nations belonging to the Anglo-American block (e.g., Brownell & Hirst, 1986; Brownell & Dunk, 1991; and Hirst, 1987, all with samples from Australia; Brownell, 1982 with sample from USA; and Dunk, 1989 with sample from UK), the second area of research has included samples from the Latin American block (e.g., Frucot & Shearon, 1991, with sample

from Singapore). Relying on Hofstede's cultural subdimensions of power distance and individualism, Harrison (1992) developed a framework to systematically examine the effect of culture on research relating to budgetary participation. His study confirmed his hypotheses that while Singapore (representing the Asian block) has a high power distance/low individualism culture and Australia (representing the Anglo-American block) has a low power distance/high individualism culture, the difference in culture has no significant effect on the relation between budget emphasis and budgetary participation on job related tension and job satisfaction. He concluded that research findings relating to budgetary participation can be generalized between nations with high power distance/low individualism culture and nations with low power distance/high individualism culture.

This study combines the two aforementioned areas of research to determine if the research findings on the relation between superiors' evaluative styles and subordinates' job related tension and performance can be generalized between nations with different cultures. Specifically, the study examines if the cultural subdimensions of power distance and individualism influence the three-way interactive effect of budget emphasis, budgetary participation and task difficulty (or task uncertainty or task variability) on each of subordinates' job related tension and performance. The effect of cultures was systematically measured and evaluated.

The results of this study would help to resolve Harrison's (1992) suggestion that research results concerning budgetary participation can be generalized between the Anglo-American block of nations with a low power distance/high individualism culture and the Asian block of nations with a high power distance/low individualism culture. More importantly, the results would also help to determine the reliability of Harrison's research framework for evaluating the effects of cultures and whether it can be extended to other aspects of managerial accounting research. Since a wealth of research findings has been accumulated over decades of research in

Asian nations would facilitate a more discriminatory rather than a wholesale adoption of Western style management accounting systems by Asian businesses. These implications are particularly important because with the rapid economic growth of many Asian nations, the need for more sophistication in Asian businesses' management accounting should accelerate. The current low level of managerial accounting research in the Asian block is unlikely to lead to a distinct Asian-style system of management accounting in the near future. Instead current Western-style management accounting systems are likely to be adopted by the Asian businesses (Scarbrough, Nanni & Sakurai, 1991) especially with the adopting of international accounting standards in the financial accounting areas. Further investigations of the effects of cultures on management accounting systems would help to determine if indiscriminate adoption of Western-style management accounting systems by Asian business is justifiable. These results, in turn, may also assist in the development of international accounting standards. These important potential contributions to the design of not only international management accounting systems but also to all aspects of accounting system at an international level, provide the second motivation for this study.

This study is also motivated by the need to extend the systematic study of the effect of superiors' evaluative styles on job related tension and managerial performance by investigating a number of areas which differ significantly from those studied by Harrison's (1990, 1992, 1993). Harrison's emphasis was primarily on subordinates' job related tension and job satisfaction. He (1992, p. 12) cited Jamal's (1985) study to support his suggestion that his results on job related tension could be extended to job performance. Others, however could not find any significant association between job related tension and job performance (Brownell & Hirst, 1986; Otley, 1978). This study therefore seeks to examine both job related tension and managerial performance and thus avoiding the necessity to make any inference between the results of job related tension and managerial performance.

Secondly, the moderating effects of task uncertainty (task difficulty) were not systematically measured and examined by Harrison. To control for environmental uncertainty and task uncertainty, his sample consisted of Australian and Singaporean middle-level managers in the merchandising and buying functions of department and retail stores whom he assumed to be involved with low to moderate level of task uncertainty. It is difficult to ascertain if the merchandising and buying functions of the department and retail stores in two different countries, Singapore and Australia, involved the same level of task uncertainty. Even if the levels of task uncertainty were similar for the two subsamples, it is difficult to ascertain if they fall within the category of low to medium task uncertainty. In any case, the effects of budgetary participation on the relation between budget emphasis affecting job related tension and managerial performance *in high* task uncertainty situations were not tested. Furthermore, the findings of Brownell and Dunk (1991) have also raised some doubts on the appropriateness of using the task uncertainty as the independent variable for task characteristics. They have argued in favour of task *difficulty* instead. Given these limitations in Harrison's (1992) study, this study will examine the moderating effects of both task uncertainty (or task difficulty) and budgetary participation on the relationship between budget emphasis and each of the dependent variables of job related tension and managerial performance. Task uncertainty (or task difficulty) will be measured and evaluated explicitly.

Thirdly, Harrison's study was restricted to an examination of a single function area (buying) and from a single industry (department and retail stores). The sample from this study will be chosen from different functional heads of both Singapore-located and Western Australia-located manufacturing companies. It will seek to examine if Harrison's (1992) results can be generalized to other functional areas such as production, sales/marketing and other staff functions and to the manufacturing industries where the use of budgets are common.

Given these gaps in the current literature, this study provides further extensions to the research

the research work in the area of supervisory evaluative style constitutes a "critical mass of empirical work in management accounting at present". From the work of Hopwood (1972) to Harrison (1992), management accounting researchers have sought to study the relations between superiors' evaluative styles and subordinates' attitudes and performance¹. Further research should contribute to a better understanding of such relationships. Such understanding has important implications for the design and implementation of management accounting control systems as it may lead to changes in superiors' budgetary and evaluative styles which, in turn, may bring about the desired subordinates' attitudes and job performance.

Research Summary

This research examined firstly, the relationship between superiors' evaluative styles affecting each of the two dependent variables of job related tension and managerial performance. It investigated the results of two important recent studies, namely, the Brownell and Hirst (1986) and Brownell and Dunk (1991) studies. The justifications for replicating both studies are discussed in Chapter 2. The second area focussed on Harrison's (1992) suggestions that research findings on budgetary participation can be generalized between nations with different culture. The moderating variable of national culture was added to the existing models to further extend the results of Brownell and Hirst's (1986) and Brownell and Dunk's (1991) studies.

The variables that were used in this study included the two dependent variables of job related tension and managerial performance and the four independent variables of budget emphasis, budgetary participation, task characteristics (comprising of task uncertainty, Withey et al., 1983; task uncertainty, Van de Ven & Delbecq, 1974; task variability and task difficulty) and culture (comprising of power distance and individualism). Further discussions and attributes of these

these variables are provided in Chapter 4. A brief definition of each of these variables are provided below:

Job related tension

Job related tension "represents tension arising from psychologically stressful circumstances in the job environment" (Kenis, 1979, p. 712). Job related tension is reflected in those aspects of the job which give rise to frustration and anxiety (Hopwood, 1973, p. 55).

Managerial performance

Managerial performance refers to the performance of the various job subdimensions that make up an individual's overall job. The Mahoney et al. (1963, 1965) instrument, comprising the eight subdimensions of managerial activities and an overall effectiveness dimension to reflect all the eight subdimensions is used in this study. The eight subdimensions of managerial activities include planning, investigating, coordinating, evaluating, supervising, staffing, negotiating and representing.

Budget emphasis

Budget emphasis is defined as the extent in which superiors rely on or emphasize prespecified budget targets as performance criteria in assessing subordinates' performance. A high budget emphasis is where a superior adheres rigidly to preset budget targets in evaluating a subordinates' performance. A low budget emphasis is where a superior takes into account other criteria and does not adhere rigidly to budget targets in evaluating subordinates'

Budgetary participation

Budgetary participation is defined as the process in which subordinates have influence in budget setting for their areas of responsibility which will subsequently be used as a yardstick to evaluate their performance.

Task uncertainty (Van de Ven & Delbecq, 1974)

This variable refers to an individual employee's belief about the completeness of the cause-effect knowledge inherent in the task (Thompson, 1967). Task uncertainty is high if knowledge on the task cause-effect relationship is incomplete, that is, the relationship between the input (or action) and the output (or outcomes) of the task is unclear or difficult to specify. Task uncertainty is low if there is complete cause-effect knowledge, that is, the output (outcome) associated with the input (action) is certain.

Task variability (Van de Ven & Delbecq, 1974)

This variable is a subdimension of task uncertainty (Van de Ven & Delbecq, 1974) and refers to the number of exceptional cases requiring different methods or procedures for doing the work (Perrow, 1967). Task variability is high (low) if the number of exceptional cases is high (low).

Task difficulty (Van de Ven & Delbecq, 1974)

This variable is another subdimension of task uncertainty (Van de Ven & Delbecq, 1974). It

analyzable and the methods of implementing these tasks as predictable (Thompson, 1967; Van de Ven & Delbecq, 1974).

Task uncertainty (Withey et al., 1983)

This variable is a composite indicator of task uncertainty, comprising the two subdimensions of task variability and task difficulty. It is a 9-item measure, of which, 5 items are identical to those in Van de Ven and Delbecq's (1974) instrument and the other four are adopted from three other instruments, namely, Van de Ven and Ferry's (1980), Daft and Macintosh's (1981) and Sims, Szilagyi and Keller's (1976) measures.

Power distance

Power distance is a dimension of national culture. It refers to the ways societies deal with human inequality. Low power distance societies regard humans as equal and attempt to minimize hierarchies (Hofstede, 1980). High power distance societies accept human inequality and institutionalize such beliefs with hierarchies that classify humans into classes or positions (Hofstede, 1980).

Individualism

Individualism is a dimension of national culture. It refers to the relationship between an individual and the group or society to which the individual belongs. High individualism societies regard each individual, and not the group, in which the individual belongs, as the

societies regard the group, in which the individual belongs, as the basic unit of society. The group is more important than each individual (Hofstede, 1980).

Hypotheses

The major hypotheses to be tested in this thesis are as follows:

There is no statistically significant three-way interaction between budget emphasis, budgetary participation and task uncertainty (Withey et al., 1983) affecting job related tension and managerial performance.

There is no statistically significant three-way interaction between budget emphasis, budgetary participation and task difficulty (Van de Ven & Delbecq, 1974) affecting job related tension and managerial performance.

Compatible combinations of high (low) budget emphasis and high (low) budgetary participation are associated with improved managerial performance in low task difficulty situations.

Regardless of the level of budget emphasis, high budgetary participation is associated with improved managerial performance in high task difficulty situations.

The interactive effect between budget emphasis, budgetary participation, task difficulty on managerial performance is independent of culture.

The theoretical developments and formulations of these hypotheses are discussed in Chapter 3.

Method

The hypotheses were tested using data collected by a questionnaire which was administered to selected functional heads from manufacturing companies located in Singapore and Western Australia. Singapore is selected in this study as a surrogate for a high power distance/low individualism culture, and Western Australia for a low power distance/high individualism culture. The reasons for selecting Singapore and Western Australia for the study are discussed in Chapter 4. The results for the measurement of power distance and individualism are presented in Chapter 5.

The 107 useable responses from the Singaporean subsample and the 90 useable responses from the Western Australian subsample were combined to provide the study with a pooled sample of 197 useable responses.

The hypotheses were tested using multiple linear regression models. The regression models and the results of the hypotheses tests, are provided in Chapter 5.

Chapter Outline and Organization

The thesis is organized as follows: Chapter 2 reviews the relevant literature which have examined the use of budgetary information for the evaluation of subordinates' job related attitudes and performance.

Chapter 3 reviews the theories that are used in formulating the hypotheses to be tested. The hypotheses relating to the moderating effects of budgetary participation and task characteristics on the relationship between budget emphasis and each of the two dependent variables of job

review of the concept of culture and Hofstede's (1980) cultural dimensions of power distance and individualism. The theories relating to budgetary participation and culture are then presented. This is followed by the formulation of the related hypotheses.

Chapter 4 discusses the research methods relating to collection of data and the justifications for the selection of nations, organizations and respondents. A discussion of the instruments that were used to measure the variables in the study and the justifications for selecting the instruments are also given in this chapter.

Chapter 5 discusses the results of the research. The response rates to the questionnaire survey, descriptive statistics for the variables measured and an assessment of the reliability of the measurement instruments are presented first. The results of the hypotheses tests are then discussed.

Chapter 6 summarizes the major findings and conclusions of the research, acknowledges the limitations of the study and also explores the avenues of future research.

CHAPTER 2

Literature Review

Introduction

The use of accounting data and the manner in which accounting data are used by superiors to evaluate subordinates may have an important effect on subordinates' attitudes and job performance. For instance, relying solely on the budgets and using them in an inflexible manner to evaluate subordinates is associated with subordinates' negative attitudes and dysfunctional behaviour (Argyris, 1952; Hirst, 1983; Hofstede, 1968; Hopwood, 1972; Lowe & Shaw, 1968; Schiff & Lewin, 1968). Subordinates' negative attitudes include high job related tension, worry about jobs, dissatisfaction and distrust with both the evaluation criteria and the evaluators. Dysfunctional behaviours include budgetary slack creation, decision making which is detrimental to the long term interest of the organization and manipulations of accounting results.

Early studies in attempting to explain the use of accounting data by superiors to evaluate subordinates' performance, have used a universalistic approach which only examines the direct effects of the independent variable on the dependent variable.

Universalistic Studies

Argyris (1952) examined the effects of superior's evaluative styles on subordinates' behaviours by interviewing managers in three small plants. He reported that subordinates were motivated

primarily by superiors for performance evaluation. He found that budgets generated increased tension, frustration, resentment, suspicion, fear and mistrust. In a study of six manufacturing plants, Hofstede (1968) also found that high emphasis on meeting the budget as a basis for the evaluation of performance resulted in lower job satisfaction, higher stress and higher anxiety among subordinates. These results are consistent with Argyris's (1952) results.

Lowe and Shaw's (1968) study of a retail chain found that a high budget emphasis in subordinates' performance evaluation also resulted in a high level of manipulations of accounting figures and creation of budgetary slack by sales managers. Schiff and Lewin (1968) reported similar dysfunctional behaviours and budgetary slack creation when high budget emphasis was used in the evaluation of performance. Consistent with Schiff and Lewin (1968), Onsi's (1973) study of five companies found that budget emphasis and pressure were positively related to budgetary slack. His results showed that of the 32 managers that participated in the study, 80% admitted to be involved in creating slack. In a study of 169 departmental heads in 19 manufacturing plants, Kenis (1979) found that a moderate budget emphasis evaluation style was positively related to subordinates' budgetary performance and a high budget emphasis evaluation style was positively related to subordinates' job tension.

Whilst the early studies (Argyris, 1952; Hofstede, 1968; Lowe & Shaw, 1968; Schiff & Lewin, 1968) provided case studies on the issue of superiors' evaluative styles and dysfunctional behaviours, Hopwood (1972) undertook the first empirical study based on formal (statistical) analyses of the relationship between dysfunctional behaviours and the use of accounting data in performance evaluation. He defined three different superiors' evaluative styles under which subordinates' performance was evaluated. The Budget-Constrained Style is the style where the budget targets are used rigidly in performance evaluation. With the Profit Conscious Style, the emphasis in performance evaluation is based on contribution to organizational profitability and long term effectiveness. With the Non-Accounting Style, the accounting data are not important

manufacturing company, Hopwood (1972, 1973) found that subordinates evaluated under the budget-constrained style (high budget emphasis) experienced higher job related tension, had less favourable relationships with superiors and peers, and were more likely to engage in dysfunctional decision making and invalid data reporting, compared with subordinates evaluated under the profit conscious or non-accounting styles. He also reported a higher tendency for subordinates evaluated under the budget constrained style to manipulate accounting data such as charging departmental expenses to other departments. Hopwood did not study the relationship between supervisory style and managerial performance. However, his results led him to suggest that subordinates' tension and dysfunctional behaviour would influence the long term performance of the firm.

Otley (1978) replicated and extended Hopwood's study to include managerial performance using managers in a British firm with independent profit centres. He followed Hopwood's definitions of evaluative styles but used a continuum of styles ranging from the Budget-Constrained Style to the Non-Accounting Style. Otley, however was unable to confirm Hopwood's results of an increase in job related tension under a budget-constrained style. Furthermore, a high budget emphasis was found to be associated with improved managerial performance.

Subsequent researchers attempted to reconcile the conflicting results between Hopwood's and Otley's findings by adopting a contingency approach and searching for situational differences between the two studies.

Contingency Perspective Studies

Several studies have used a contingent framework to provide a rationale for reconciling

The first explanation was offered by Hirst (1981) who suggested the contingent variable of task uncertainty. He relied on Thompson's (1967) model which differentiates tasks on the basis of each individual's beliefs about the cause-effect knowledge of the tasks. He suggested that accounting measures are perceived as more complete measures of performance in low task uncertainty situations than in high task uncertainty situations. The use of an accounting measure such as a high budget emphasis in a high task uncertainty situation is incompatible and can therefore lead to dysfunctional behaviour. Since Hopwood (1972) studied departments which were highly interdependent, his subjects were likely to be operating in a high task uncertainty situations. In contrast, since Otley studied departments which were independent, his subjects were likely to be operating in low task uncertainty situations. Hirst suggested that a high budget emphasis would therefore result in poor performance for Hopwood's subjects (high task uncertainty) but not for Otley's subjects (low task uncertainty).

Hirst (1983) empirically tested his hypotheses using a questionnaire survey of part-time graduates students employed as full-time managers. His results indicated a linear relationship between job related tension and budget emphasis which was negative for low task uncertainty situations and positive for high task uncertainty situations. Hirst did not test the relation between budget emphasis and managerial performance but used job related tension as a surrogate for long-run performance. Imoisili (1989) also examined the moderating effects of task uncertainty on job related tension and managerial performance. However no significant results were found in his study.

Govindarajan (1984) and Brownell (1985; 1987) both examined environmental uncertainty which is one aspect of task uncertainty. Environmental uncertainty was defined as the unpredictability of the actions of outsiders (e.g., customers, suppliers, competitors and regulatory groups) to the organizations (Govindarajan, 1984). Following Hirst (1981), knowledge of the cause-effect relationship of task would be incomplete in situations where

therefore be more appropriate in such situations. All three studies (Brownell, 1985, 1987; Govindarajan, 1984) found support for their hypotheses that high (low) budget emphasis is appropriate in low (high) level of environmental uncertainty situations.

Brownell (1982) attempted to resolve the Hopwood/Otley conflict by suggesting the presence of the moderating effects of budgetary participation. Relying on the two theoretical paradigms of operant conditioning and balance theory, he argued that a high budget emphasis is appropriate when it is accompanied by high levels of participation where managers are allowed to negotiate budget criteria in performance evaluation. Conversely, a low budget emphasis is appropriate when it is accompanied by low levels of participation. He suggested that compatible combinations of high (low) budget emphasis and high (low) budgetary participation are associated with improved performance. Using a questionnaire-based field study of a manufacturing firm, Brownell (1982) reported that high (low) budget emphasis was associated with improved managerial performance only when budgetary participation was high (low). He further reported that poorer performance was associated with situations which involved both high (low) budget emphasis and low (high) budgetary participation.

Govindarajan (1984) provided evidence that budgetary participation interacted with environmental uncertainty and that participation was associated with enhanced performance in high level of environmental uncertainty situations but not in low levels of environmental uncertainty situations. It was presumed that in low environmental uncertainty situations, there were more routine decisions and subordinates' participation in decisions with obvious solutions was a waste of time.

Bottger and Hirst (1988), in a study of a large property development firm, found that budgetary participation reduced job related tension where budget emphasis was high but no effect when budget emphasis was low.

Two studies however were unable to confirm Brownell's (1982) findings of a two-way interaction between budget emphasis and budgetary participation. Hirst's (1987) study of a property development firm found no significant interaction between budget emphasis and budgetary participation affecting overall job performance. On the other hand, Dunk's (1989) cross-sectional study of 26 firms found that high (low) budgetary participation coupled with high (low) budget emphasis reduced managerial performance. These results were inconsistent with Brownell's (1982) findings.

The Brownell and Hirst (1986) study was motivated by the results of Brownell (1982) and Hirst (1983). Brownell and Hirst (1986) combined Hopwood's (1972) independent variable of budget emphasis with Brownell's (1982) moderating variable of budgetary participation and Hirst's (1983) moderating variable of task uncertainty leading to a test of a three-way interaction between budget emphasis, budgetary participation and task uncertainty. Brownell and Hirst suggested that the results of Brownell's (1982) study would hold in low task uncertainty situations but not in high task uncertainty situations. They expected budgetary participation to have favourable effects on job related tension and managerial performance in high task uncertainty situations regardless of the level of budget emphasis. Their results supported their hypotheses on job related tension but not on managerial performance. In addition, they were unable to confirm the two-way interactive effects of budget emphasis and budgetary participation on performance found in Brownell's (1982) study. The results on managerial performance were perplexing as both studies had used the same measurement instruments for the variables in the study.

The failure of the Brownell and Hirst (1986) study to confirm the hypotheses on the dependent variable of managerial performance led to the Brownell and Dunk (1991) study. The key feature of this study was the replacement of the moderating variable of task uncertainty with another variable, task difficulty, as measured by the scale developed by Van de Ven and

being task variability. Brownell and Dunk (1991) attributed the failure of Brownell and Hirst's (1986) study to the inappropriate choice of the instrument to measure task characteristic. Brownell and Hirst (1986) had measured task uncertainty with a new instrument developed by Withey et al. (1983) which is a composite indicator of task uncertainty, comprising the two subdimensions of task difficulty (analyzability) and task variability (number of exceptions). Brownell and Dunk (1991) argued that task difficulty was the more appropriate variable for their study as task variability was unlikely to have any moderating effect on managerial performance. The results of their study confirmed their hypotheses that compatible combinations of low (high) budget emphasis and low (high) budgetary participation are associated with improved managerial performance in low task difficulty situations. In high task difficulty situations, high budgetary participation is associated with improved managerial performance regardless of the levels of budget emphasis.

Harrison (1990, 1992, 1993) extended this systematic body of research in superiors' evaluative styles by studying the cross-cultural generalizability of research results of budget emphasis, participation and job related attitudes. His research framework was based on Hofstede's (1980) dimensions of culture - power distance and individualism. These two dimensions were hypothesized to be related to superiors' evaluative styles and budgetary participation.

He (1992) examined the effects of budget emphasis and participation on job related tension and job satisfaction with samples from both Australia (representing the Anglo-American block) and Singapore (representing the Asian block). His results not only reaffirmed Hofstede's (1980, 1983) classification of Singapore as a high power distance/low individualism nation and Australia as a low power distance/high individualism nation, they also indicated no significant three-way interaction between nation, participation and budget emphasis. This suggests that the effect of participation on the relation between budget emphasis and job related tension on one hand, and job satisfaction on the other, is not moderated by culture.

Since he found a significant interaction between participation and budget emphasis affecting job related tension, he concluded that his results were consistent with those of Brownell and Hirst (1986) observed in low task uncertainty situations. He further suggested that his results were also consistent with Brownell's (1982) results by relying on the findings of a previous study (Jamal, 1985) which indicated that reduced job related tension was associated with improved managerial performance. He also concluded that research findings concerning budgetary participation can be generalized to nations that have similar cultural dimensions as those of Singapore and Australia.

Apart from studying the effect of national culture on budgetary participation, Harrison (1990, 1992, 1993) also studied the moderating effect of the personality variable of authoritarianism on the relation between reliance on accounting performance measure (budget emphasis) and subordinates' job related tension, job satisfaction and relations with superiors and peers. He found significant interaction between national culture and reliance on accounting performance measures affecting job related tension and job satisfaction. However he was unable to find any significant results for his hypotheses on the personality variable of authoritarianism.

Conclusions

The preceding literature review indicates the extant research on the relations between superiors' evaluative styles on the one hand and subordinates' job related attitudes and performance on the other. A number of conclusions can be drawn from the review.

First of all, the review indicates that research relating to superiors' evaluative styles has been progressing systematically since the early empirical work of Hopwood in 1972 . The number of studies that are published recently indicate that this area of research is still very much a part of

the mainstream research work in management accounting today (e.g., Brownell & Dunk, 1991, Harrison, 1993). Further research in this area is likely to occur.

Secondly, although the results of the early studies are contradictory, results from the more recent studies are able to resolve some of these contradictions. Two important recent studies, Brownell and Hirst (1986) and Brownell and Dunk (1991) have provided evidence and plausible explanations to resolve the early studies' conflicting results. Whilst Brownell and Hirst provided findings to explain the contradictory results relating to job related tension, Brownell and Dunk provided findings on managerial performance. The results of these two studies are likely to influence the direction of future research in this area. Future research is likely to include further extensions and developments of these results and conclusions.

However, although the results of Brownell and Hirst (1986) and Brownell and Dunk (1991) were each able to provide evidence to support their hypotheses relating to job related tension and managerial performance respectively, the results of these two studies were not entirely consistent. Thus, whilst Brownell and Hirst (1986) were able to support their hypotheses relating to job related tension, they were unable to support their hypotheses relating to managerial performance even though the same independent variables were studied and the same measurement instruments and respondents were used. There has also been some reservations on their measurement of managerial performance as the R-square of regressing the overall rating of managerial performance on the eight subdimensions of managerial performance was only 0.35. This was substantially below the 0.55 suggested by Mahoney et al. (1963, 1965). Further work in this thesis, using the same measurement instruments as Brownell and Hirst to determine if their results relating to both job related tension and managerial performance could be replicated, may prove to be worthwhile.

The inconsistency in the results of Brownell and Hirst relating to job related tension and

variables on job related tension and managerial performance are not the same. Hence, this reinforces the need for this thesis and other future studies to examine both of these dependent variables independently and explicitly.

The results of Brownell and Dunk appear to have resolved the conflicting results of the earlier studies relating to managerial performance. However, as they have not studied the interaction between budget emphasis, budgetary participation and task difficulty affecting *job related tension*, further work along this line was undertaken by this thesis to determine if Brownell and Dunk's (1991) results could also be extended to subordinates' job related tension.

Furthermore, Brownell and Hirst (1986) and Brownell and Dunk (1992) have used different measurement instruments to measure task characteristics. Whilst Brownell and Hirst measured task uncertainty using the Withey et al. (1983) instrument, Brownell and Dunk measured task difficulty with the Van de Ven and Delbecq (1974) instrument. Given the difference in instruments, it is perplexing that both studies have found significant interactive effects, although the Brownell and Hirst significant findings were confined to their hypotheses relating to job related tension. Further work using the two different measurement instruments to measure task characteristics may be worthwhile.

The literature review also indicates an emergence of a new extension of research relating to superiors' evaluative styles. These studies attempt to relate national culture to superiors' evaluative styles in a systematic manner (Harrison, 1990, 1992, 1993; Hwang, 1989). The new research framework and the systematic approaches adopted by these studies to evaluate the effects of national culture, suggest that cultural effects on management accounting systems need no longer be treated as a "blackbox". Future research can also no longer attribute any unexplained results to cultural effects. This has provided the opportunity and justification for the replications of significant research in different cultures. Moreover, as this line of research is

An important characteristic of these early studies on national culture has been their emphasis primarily on the approach to systematically evaluate the cultural effects. Harrison (1990, 1992, 1993) was primarily interested in developing a new systematic approach for studying the effects of national culture on management accounting systems. The model on superiors' evaluative styles used was incomplete. For example, the effect of task uncertainty was not studied but was controlled by selecting his sample from only a single functional area and from a single industry. This has provided the opportunity for this thesis to cover an area of research not previously done before, namely, to further extend the results of Brownell and Hirst (1986) and Brownell and Dunk (1991) by the addition of a further moderating variable, namely, national culture, to the existing models.

CHAPTER 3

Theoretical Development and Hypotheses Formulation

Introduction

Previous studies on superiors' evaluative styles and subordinates' performance have found a significant three-way interaction between budget emphasis, budgetary participation and task characteristics affecting subordinates' job related tension and managerial performance (Brownell & Dunk, 1991; Brownell & Hirst, 1986). The evidences and theories supporting the relationship as well as the hypothesized relationship will be presented in the following section.

Definition and Theoretical Attributes of Budget Emphasis

A high budget emphasis superior's evaluative style is defined in this thesis as a style where a superior adheres rigidly to preset budget targets in assessing a subordinates' performance. An evaluative style of low budget emphasis is a style where a superior, in evaluating a subordinates' performances, takes into account other criteria and does not adhere rigidly to budget targets.

Hopwood (1972) identified three performance evaluation styles. They are:

- (i) a budget constrained style, where meeting the budget is an important criterion in assessing subordinates' performance. "This criterion of performance is stressed at the expense of other valued and important criteria and a (subordinate) will tend to receive an unfavourable

evaluation if his actual costs exceed the budgeted costs, regardless of other considerations" (Hopwood, 1972, p. 160).

(ii) a profit conscious style, where accounting data are used in a flexible manner in performance evaluations. Hopwood (1972, p. 168) noted that the flexible use of accounting data provides the subordinates with opportunities to explain deviations from the budgets.

(iii) a nonaccounting style, where data are unimportant in assessing a subordinates' performance.

Brownell (1982), Brownell and Hirst (1986) and Brownell and Dunk (1991) regarded Hopwood's "nonaccounting" and "profit conscious" styles as representing low budget emphasis while Hopwood's "budget constrained" style as representing high budget emphasis.

High budget emphasis has been suggested to be associated with higher job related tension as budgets have been claimed to be an inadequate mean for assessing performance (Hirst, 1981; Hopwood, 1973). Hopwood (1973) suggested that budget criteria are ambiguous and incapable of capturing all the dimensions of managerial performance. Hence conflicts between superiors and subordinates are likely to occur with a high budget emphasis evaluative style. Such disagreements are likely to result in higher subordinates' job related tension especially when performance evaluation is closely tied to rewards.

By contrast, low budget emphasis is unlikely to be associated with higher job related tension. There is likely to be a low chance of disagreements over budget data with a low budget emphasis evaluative style.

However there are conflicting empirical evidence on the relation between budget emphasis and

subordinates' job related tension whereas Otley (1978) found no significant association between budget emphasis and job related tension. Subsequent researchers have offered budgetary participation and task characteristics to explain the inconsistent results (Brownell, 1982; Bottger & Hirst, 1988; Brownell & Dunk, 1991; Brownell & Hirst, 1986; Hirst, 1983).

Budgetary Participation

Budgetary participation refers to the process in which subordinates have influence in budget setting for their areas of responsibility which will subsequently be used as a yardstick to evaluate their performance.

Brownell (1982) suggested the presence of the moderating effect of budgetary participation to resolve the Hopwood and Otley conflicting results. Relying on the two theoretical paradigms of operant conditioning and balance theory, he suggested that a high budget emphasis together with high budgetary participation is associated with improved managerial performance. Similarly, a low budget emphasis together with low budgetary participation is also associated with improved performance. A reward structure linked to a budget achievement is likely to reinforce subordinates' motivation only if budgetary participation is high. Conversely, a reward structure unrelated to budget achievement is likely to reinforce subordinates' motivation only if imposed budgets are used. The results of his study confirmed his hypotheses.

Bottger and Hirst (1988) argued that high budgetary participation is likely to alleviate job related tension associated with high budget emphasis. Firstly, in the process of participation, subordinates exchange information and as a result have a better understanding of the constraints in the allocation and availability of resources. The budget criteria are therefore

hypothesis that budgetary participation reduces job related tension where budget emphasis is high but has no effect on job related tension when budget emphasis is low.

Task Characteristics

Hirst (1983) attributed the contradictory results of Hopwood and Otley to the moderating effects of task uncertainty. He relied on Thompson's (1967) model which differentiates tasks on the basis of individuals' knowledge about the cause-effect relationships inherent in the task. Task uncertainty is high if knowledge on the task cause-effect relationship is incomplete, that is, the relationship between the input (or action) and the output (or outcome) is unclear or difficult to specify. Task uncertainty is low if there is complete cause-effect knowledge, that is, the output (outcome) associated with the input (action) is certain. In low task uncertainty situations, a high budget emphasis is unlikely to be stressful to subordinates as they are likely to agree with the choice of evaluation criteria. However, in high task uncertainty situations, a high budget emphasis is likely to be stressful as subordinates are likely to disagree with the choice of evaluation criteria due to the unclear task input/output relationship. Hirst (1983) found a strong association between high budget emphasis and high job related tension in high task uncertainty situations. In contrast, in low task uncertainty situations, high job related tension was associated with low budget emphasis.

Budget Emphasis, Budgetary Participation and Task Uncertainty

Brownell and Hirst (1986) suggested that the results of Brownell's (1982) study that compatible combinations of high (low) budget emphasis and high (low) budgetary participation would only hold in low task uncertainty situations, but not in high task uncertainty situations. They

performance in high task uncertainty situations because "participation may provide the opportunity for managers to gain access to resources which can be used to buffer task performance from the unanticipated effects of others, and to introduce new and better means for addressing tasks which, if highly uncertain, will have characteristics that change over time" (Brownell & Hirst, 1986, p. 242). The results supported their hypotheses that compatible combinations of low (high) budget emphasis and low (high) budgetary participation are associated with low job related tension but only in low task uncertainty situations. In high task uncertainty situations, high budgetary participation is associated with low job related tension regardless of the level of budget emphasis.

They were however unable to support their hypotheses on managerial performance. Additionally, they were also unable to confirm the two-way interactive effects of budget emphasis and budgetary participation on performance found in Brownell's (1982) study. They suggested that a possible explanation for the results to support their hypotheses on managerial performance could be due to the cultural problems associated with their samples. In addition, there are some reservations in their measurement of managerial performance as the R-square of regressing the overall rating of managerial performance on the eight subdimensions of managerial performance was only 0.35. This is substantially below the 0.55 suggested by Mahoney et al. (1963, 1965) whose instrument was used by Brownell and Hirst to measure managerial performance. Whilst their hypotheses on the first dependent variable, managerial performance, were not confirmed, the hypotheses on the second dependent variable, job related tension, were confirmed. These two reasons discussed above, namely, (i) the reservations on the results on managerial performance and (ii) the confirmation of the hypotheses on job related tension, suggest that the results of the study on managerial performance (based on the Withey et al. instrument) justify further investigation. Furthermore, since a major objective of this study is to determine if research relating to budgetary participation conducted in a low power distance/high individualism nations (such as Australia) can be generalized to a high

for the Brownell & Hirst study to be replicated to determine if their results would hold with a pooled sample of Singaporean and Western Australian managers.

In summary, Brownell and Hirst (1986) had considered task uncertainty as the task characteristic to be studied, and had measured it with the scale developed by Withey et al. (1983). These same variable and measurement instrument were employed in this study. Since Brownell and Hirst (1986) had studied the two dependent variables of job related tension and managerial performance and had conflicting results for these two dependent variables, both of these two dependent variables were also studied in this thesis to determine if Brownell and Hirst's results could be replicated and generalized to Singapore.

The following general hypotheses are therefore tested:

- H₀₁ There is no statistically significant three-way interaction between budget emphasis, budgetary participation and task uncertainty (Withey et al., 1983) affecting job related tension.
- H_{A1} There is a statistically significant three-way interaction between budget emphasis, budgetary participation and task uncertainty (Withey et al., 1983) affecting job related tension.
- H₀₂ There is no statistically significant three-way interaction between budget emphasis, budgetary participation and task uncertainty (Withey et al., 1983) affecting managerial performance.
- H_{A2} There is a statistically significant three-way interaction between budget emphasis, budgetary participation and task uncertainty (Withey et al., 1983) affecting

Budget Emphasis, Budgetary Participation and Task Difficulty

Brownell and Dunk (1991) attempted to resolve the failure of Brownell and Hirst (1986) to support their hypotheses with respect to managerial performance. Brownell and Dunk attributed the failure of Brownell and Hirst to the inappropriate choice of the instrument used to measure task uncertainty. Brownell and Hirst had measured task uncertainty with a new instrument developed by Withey et al. (1983) which is a composite indicator of task uncertainty, comprising the two subdimensions of task difficulty (analyzability) and task variability (number of exceptions).

Van de Ven and Delbecq (1974) who first operationalized the two subdimensions of task uncertainty, explained their relations as follows:

Task difficulty refers to the analyzability of the work itself and the extent to which there is a known procedure that specifies the sequences of steps to be followed in performing the task...Task variability...refers to the number of exceptional cases encountered in the work requiring different methods or procedures for doing the work...Task difficulty and task variability are viewed as two independent dimensions that do not overlap in meaning. (p. 183-184).

Of the two subdimensions of task uncertainty, Brownell and Dunk regarded task difficulty as the more appropriate subdimension to be measured to replicate the findings of Brownell (1982). When task difficulty is high, that is, when the input/output relations of the tasks are difficult to specify or unclear, there is a greater need for budgetary participation to increase the incomplete task cause-effect knowledge. Task variability, on the other hand, refers to the variability of the subtasks. High task variability may arise because of many different subtasks, but if each one is easily analysable in terms of input/output relations, the task cause-effect knowledge may be

Nadler, 1978), there would be less need for participation. It is likely that managers would improve their performance if their time is not wasted by participation in decisions with obvious solutions (Strauss, 1982). Brownell's (1982) results are therefore expected to hold only in different task difficulty situations and not in different task variability situations.

The moderating effects of task difficulty on the relation between budgetary participation and managerial performance have also been examined by Mia (1989). He argued that task difficulty is a surrogate for other task characteristics such as task variability. He hypothesized that participation in budgeting improves managerial performance in high task difficulty situations. In such situations, since more information is required to perform the task (Fry & Slocum, 1984), managers may not have all the necessary information to perform their tasks. Hence additional information is needed to understand their tasks more clearly and also to improve their performance (Mia, 1989). Participation, as a mechanism for information exchange to enable managers to obtain and process additional information about their tasks, has also been supported by Hopwood (1976) and Galbraith (1977). Hopwood (1976, p. 83-85) for example argued that in high task difficulty situations, participation in budgeting offers greater benefits than a non-participative style.

The results of Brownell and Dunk's (1991) study supported a three-way interactive and positive effects between budget emphasis, budgetary participation and task difficulty on managerial performance only in low task difficulty situations. There were no significant interactive effects on managerial performance when task variability was used independently.

In summary, based on Van de Ven and Delbecq's (1974) instruments, task characteristics can be measured in three different ways, namely, task uncertainty, task variability and task difficulty. A significant three-way interaction is expected for task difficulty but not for task uncertainty and task variability.

Both the dependent variables of job related tension and managerial performance were studied in this study. Previous studies have indicated that the results of job related tension do not necessary extend to managerial performance (e.g., Brownell & Hirst, 1986; Hopwood, 1972; Otley, 1978). Secondly, while different measurement instruments were used to measure task characteristic in Brownell and Hirst (1986) and Brownell and Dunk (1991), both studies found significant three-way interactive effects. Brownell and Hirst had significant findings for job related tension while Brownell and Dunk had significant findings for managerial performance. The study of both job related tension and managerial performance, together with the employment of the same measurement instruments used by Brownell and Hirst (1986) and Brownell and Dunk (1991) may help to resolve the conflicting results of the two studies. Finally, as Brownell and Dunk (1991) have not studied the three-way interactive effects on job related tension, the inclusion of job related tension in this study would help to determine if their results on managerial performance can be generalized to job related tension as well.

The following general hypotheses are therefore tested:

- H₀₃ There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task uncertainty* (Van de Ven & Delbecq, 1974) affecting *job related tension* .
- H_{A3} There *is* a statistically significant three-way interaction between budget emphasis, budgetary participation and *task uncertainty* (Van de Ven & Delbecq, 1974) affecting *job related tension* .
- H₀₄ There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task uncertainty* (Van de Ven & Delbecq, 1974) affecting *managerial performance*.

- H_{A4} There is a statistically significant three-way interaction between budget emphasis, budgetary participation and *task uncertainty* (Van de Ven & Delbecq, 1974) affecting *managerial performance*.
- H_{O5} There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task variability* (Van de Ven & Delbecq, 1974) affecting *job related tension*.
- H_{A5} There is a statistically significant three-way interaction between budget emphasis, budgetary participation and *task variability* (Van de Ven & Delbecq, 1974) affecting *job related tension*.
- H_{O6} There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task variability* (Van de Ven & Delbecq, 1974) affecting *managerial performance*.
- H_{A6} There is a statistically significant three-way interaction between budget emphasis, budgetary participation and *task variability* (Van de Ven & Delbecq, 1974) affecting *managerial performance*.
- H_{O7} There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task difficulty* (Van de Ven & Delbecq, 1974) affecting *job related tension*.
- H_{A7} There is a statistically significant three-way interaction between budget emphasis, budgetary participation and *task difficulty* (Van de Ven & Delbecq, 1974) affecting *job related tension*.

- H_{A7a} Compatible combination of high (low) budget emphasis and high (low) budgetary participation are associated with lower *job related tension* in low task difficulty situations.
- H_{A7b} Regardless of the level of budget emphasis, high budgetary participation is associated with lower *job related tension* in high task difficulty situations.
- H_{o8} There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task difficulty* affecting *managerial performance*..
- H_{A8} There *is* a statistically significant three-way interaction between budget emphasis, budgetary participation and *task difficulty* affecting *managerial performance*..
- H_{A8a} Compatible combination of high (low) budget emphasis and high (low) budgetary participation are associated with improved *managerial performance* in low task difficulty situations.
- H_{A8b} Regardless of the level of budget emphasis, high budgetary participation is associated with improved *managerial performance* in high task difficulty situations.

Concept of Culture

Culture has been defined in many ways by different authors (Ansari & Bell, 1985; Evans, 1975; Fayerweather, 1959; Frost, Moore, Louis, Lunberg & Martin, 1985; Hofstede, 1980; Kluckhohn, 1951; Kroeber & Parsons, 1958; Rohner, 1984).

Rohner (1984, p. 119-120) defined culture as "the totality of equivalent and complementary learned meanings maintained by a human population, or by identifiable segments of a population and transmitted from one generation to the next". Kroeber and Parsons (1958, p. 582-583) defined culture as "transmitted and created content and pattern of values, ideas and other symbolic meaningful systems as factors in the shaping of human behaviour".

Hofstede (1980, p. 25) defined culture as "the collective programming of the mind which distinguishes the members of one human group from another". The contents of mental programs have been described as values and have been defined as "a broad tendency to prefer certain status of affairs over others" (Hofstede, 1980, p. 19). The norm values maintained by the group are seen to comprise culture which Hofstede (1980) termed "dimension" of culture. The four dimensions of culture identified by Hofstede (1980) are power distance, individualism, uncertainty avoidance and masculinity.

The Cultural Dimension of Power Distance

The dimension of power distance refers to the way societies deal with human inequality. Low power distance societies regard humans as equal and attempt to minimize hierarchies. Whatever hierarchies that still exist, exist solely for administrative convenience, not to classify people into classes (Hofstede, 1980). High power distance societies accept human inequality and institutionalize such beliefs with hierarchies that classify people into classes or positions (Hofstede, 1980).

Hofstede (1980) defines power distance as :

The power distance between a boss B and a subordinate S in a hierarchy is the difference between the extent to which B can determine the behaviour of S and the extent to which S can determine the behaviour of B. (p. 99).

Power distance, as a characteristic of a culture, defines the extent to which the less powerful person in a society accepts inequality in power and considers it normal. Inequality exists within any culture, but the degree of it is tolerated varies between one culture and another. (p.390).

Hofstede's (1980) measure of power distance index (PDI) scores for the 40 countries is reported in Appendix A. Hofstede (1980, p. 122) also describes the general societal norm for low power distance index (low PDI) and high power distance index (high PDI) syndromes. The full listing is reproduced in Figure 1.

Figure 1

The Power Distance Societal Norm

Low PDI	High PDI
Inequality in society should be minimized.	There should be an order of inequality in this world in which everyone has his rightful place; high and low are protected by this order.
All should be interdependent.	A few should be independent; most should be dependent.
Hierarchy means an inequality of	Hierarchy means existential

Figure 1

The Power Distance Societal Norm (Continued)

Low PDI	High PDI
Subordinates are people like me.	Superiors consider subordinates as being of a different kind.
Superiors are people like me.	Subordinates consider superiors as being of a different kind.
The use of power should be legitimate and is subject to the judgement between good and evil.	Power is a basic fact of society which antedates good or evil. Its legitimacy is irrelevant.
All should have equal rights.	Powerholders are entitled to privileges.
Powerful people should try to look less powerful than they are.	Powerful people should try to look as powerful as possible.
Stress on reward, legitimate and expert power.	Stress on coercive and referent power.
The system is to blame.	The underdog is to blame.
The way to change a social system is by redistributing power.	The way to change a social system is by dethroning those in power.
People at various levels feel less threatened and more prepared to trust people.	Other people are a potential threat to one's power and rarely can be trusted.
Latent harmony between the	Latent conflict between the

Figure 1

The Power Distance Societal Norm (Continued)

Low PDI	High PDI
Cooperation among the powerless can be based on solidarity.	Cooperation among the powerless is difficult to bring about because of low faith in people.

Note. From Culture's consequences: international differences in work-related values (p. 122)
by Hofstede, G. H., 1980, Beverly Hills, Calif.: Sage Publications, Inc.

A summary of the "connotations" of high and low power distance for nations, that is, what the societal norm of power distance stands for in nations, is also provided by Hofstede (1980, p. 119). This is reproduced in Appendix A. The summary was assembled by Hofstede from the various surveys of his studies (Hofstede, 1980, p. 114-120).

The Influence of Power Distance on Budgetary Participation

As noted in Figure 1, in low power distance societies, subordinates and superiors consider each other as being of the same kind, all should have equal rights and be interdependent (Hofstede, 1980, p. 122). In such societies, budgetary participation is likely to be genuine and beneficial. Subordinates expect their superiors to consult and discuss with them, decisions that affect them. Superiors are seen as making decisions only after consulting subordinates. Subordinates are more satisfied with participative superiors and have preference for the consultative, give-and-take decision-making styles of their superiors (Hofstede, 1980, p. 119). As noted by

Further support in respect of subordinates' favourable reactions to budgetary participation in low power distance societies is provided by Child (1981, p. 327), Hofstede (1980, p. 110) and Perera and Mathews (1987, p. 12). Hofstede (1980, p. 110) pointed out that "practice has shown that not only informal consultation but also formal participation has advanced more easily in some low PDI countries such as Sweden and Norway, than in high PDI countries such as Yugoslavia, Peru or Chile".

By contrast, societies with high power distance indices accept human inequalities and hierarchies. Superiors consider subordinates as of a different class or position and vice versa (Hofstede, 1980, p. 122). Subordinates in such societies have strong dependence needs and expect their superiors to behave autocratically and paternalistically. They may even feel uncomfortable if their superiors consult them. Support for employees' participation is only ideological (Hofstede, 1980, p. 119). In such societies, budgetary participation is likely to be "pseudo" and counter productive.

The Cultural Dimension of Individualism

Hofstede (1980, p. 213) described individualism "as the relationship between the individual and the collectivity which prevails in a given society ...(and)... is reflected in the way people live together". In high individualism societies, "the ties between individuals are very loose" (Hofstede, 1983, p. 79). Each individual is assumed to look primarily after his or her own self-interest and the interest of his or her immediate family (husband, wife, and children) (Hofstede, 1984, p. 79). By contrast, in low individualism societies, individuals are born into and belong to one or more close "ingroups" (whether extended family, clan or organization) and "everybody is supposed to look after the interest of his or her own ingroup and to have no other opinions and beliefs than the beliefs in their ingroup" (Hofstede, 1983, p. 79).

Hofstede's (1980, p. 235) descriptions of the general societal norms for low individualism value (low IDV) and high individualism value (high IDV) syndromes are reproduced in Figure 2.

Figure 2

The Individualism Societal Norm

Low IDV	High IDV
In society, people are born into extended families and clans which protect them in exchange for loyalty.	In society, everyone is supposed to take care of him or herself and his or her immediate family.
"We" consciousness.	"I" consciousness.
Collectivity-orientation.	Self-orientation.
Identity is based in the social system.	Identity is based in the individual.
Emotional dependence of individual on organizations and institutions.	Emotional independence of individual from organizations or institutions.
Emphasis on belonging to organization; membership ideal.	Emphasis on individual initiative and achievement; leadership ideal.
Private life is invaded by organizations and clans to which one belongs; opinions are predetermined.	Everyone has a right on a private life and opinion.

Figure 2

The Individualism Societal Norm (Continued)

Low IDV	High IDV
Expertise, order, duty, security provided by organization or clan.	Autonomy, variety, pleasure, individual financial security.
Friendships determined by stable social relationships; but need for prestige within these relationships.	Need for specific friendships.
Belief in group decisions.	Belief in individual decisions.
Value standards differ for ingroups and outgroups; particularism.	Value standards should apply to all; universalism.

Note. From Culture's consequences: international differences in work-related values (p. 235)

by Hofstede, G. H., 1980, Beverly Hills, Calif: Sage Publications, Inc.

The Influence of Individualism on Budgetary Participation

As discussed earlier, individualism refers to the relationship between the individual and the group or society to which the individual belongs. In high individualism societies, the emphasis is on the individual rather than the group(s) (Hofstede, 1980, p. 235). By contrast, a low individualism society regards the group(s) to which the individual belongs and not the individual as the basic unit of society (Hui, 1984, p. 28).

Budgetary participation is likely to be favourable and beneficial in a low individualism society but not in a high individualism society (Harrison, 1992, p. 4). In a low individualism society, there is a preference for group decisions as group decisions are regarded as better than individual decisions. By contrast, in a high individualism society, there is a preference for individual's (the superiors') decisions (Hofstede, 1980, p. 235). Individuals' decisions (namely, the superiors' decisions) are regarded as better than the group decisions. Harrison (1992, p. 4) and Chow et al. (1991, p. 211) also provided support for participation to be seen as favourable in low individualism societies. Chow et al. (1991) cited a study by Lincoln and McBride (1987) that Japanese management approaches such as teams, participative decision making and quality circles stem from the collective culture of Japan.

The Cross-National Generalizability of Budgetary Participation

As discussed above, subordinates' reactions to budgetary participation are likely to be influenced by national culture. For example, in a high power distance and high individualism society, subordinates' reactions to budgetary participation is likely to be unfavourable. In contrast, in a low power distance and low individualism society, subordinates' reactions to budgetary participation is likely to be favourable. However, there are only a few nations that have the cultural dimensions of either high power distance /high individualism or low power distance/ low individualism. Hofstede's (1983, p. 82) plot of 50 countries based on his measure of power distance and individualism scores shows that a large majority (47) of the countries have either a low power distance/high individualism culture or a high power distance/low individualism culture. The 15 nations which have a low power distance/high individualism culture include nations like USA, Canada, Great Britain, Australia and New Zealand which are commonly regarded as the Anglo American block. The 32 nations that have a high power distance/low individualism culture includes the Asian block of countries like Singapore, Hong

A large majority of countries therefore have opposing levels of power distance and individualism that neutralize the cultural effects on subordinates' reactions to budgetary participation. In nations with low power distance/high individualism culture, the cultural effects of the low power distance that favours budgetary participation is likely to be counterbalanced by the effects of high individualism which does not favour participation. The opposing effects of low power distance and high individualism would effectively neutralize the cultural effects on subordinates' reactions to budgetary participation. Similarly, the opposing effects of high power distance and low individualism would also neutralize the cultural effects of subordinates' reactions to budgetary participation. Thus, the counterbalancing effects of the cultural dimensions for nations exhibiting the high power distance/low individualism culture and low power distance/high individualism culture render subordinates' reactions to budgetary participation in these culturally different countries to be similar. No cultural effects on subordinates' reactions to budgetary participation are expected between nations with high power distance/low individualism (Asian block) and nations with low power distance/high individualism (Anglo-American block).

Consistent with Harrison's (1990, p. 69) suggestion that the cultural dimensions of power distance and individualism are "highly relevant values influencing the management process of leadership and performance evaluation [and] permit the clear formulation of hypotheses [and because] the combined occurrence of these dimensions in a significant number of nations enhances the generalizability of the results of such studies", this study will also examine only the dimensions of power distance and individualism. These two dimensions are hypothesized to be related to budgetary participation.

Combining the work of Brownell and Hirst (1986), Brownell and Dunk (1991), and Harrison (1992), the following hypotheses are developed:

- H₀₉ The interactive effect between budget emphasis, budgetary participation and *task difficulty* on *job related tension* is *independent* of culture.
- H_{A9} The interactive effect between budget emphasis, budgetary participation and *task difficulty* on *job related tension* is *dependent* on culture.
- H_{A9a} The interactive effect of compatible combination of high (low) budget emphasis and high (low) budgetary participation on *job related tension* in low task difficulty situations is *dependent* on culture.
- H_{A9b} The effect of budgetary participation on *job related tension* in high task difficulty situations is *dependent* on budget emphasis and culture.
- H₀₁₀ The interactive effect between budget emphasis, budgetary participation and *task difficulty* on *managerial performance* is *independent* of culture.
- H_{A10} The interactive effect between budget emphasis, budgetary participation and *task difficulty* on *managerial performance* is *dependent* of culture.
- H_{A10a} The interactive effect of compatible combination of high (low) budget emphasis and high (low) budgetary participation on *managerial performance* in low task difficulty situations is *dependent* on culture.
- H_{A10b} The effect of budgetary participation on *managerial performance* in high task difficulty situations is *dependent* on budget emphasis and culture.

CHAPTER 4

Methodology

Data Collection

The data for this study were collected using a questionnaire which was administered to a sample of 410 functional heads from 142 selected manufacturing companies with more than 100 employees each and located in Singapore and Western Australia. Out of the total number of participants, 240 from 80 companies located in Singapore and the remaining 170 were from 62 companies located in Western Australia. The questionnaire for the Singaporean sample was mailed out in mid-December 1992. The questionnaire for the Western Australian sample was sent out in early January 1993 to avoid the possible response delay due to the long Christmas break in Western Australia.

Selection of Nations

Singapore and Australia were selected as nations for the study for a number of reasons. Firstly, based on Hofstede's (1980) cultural dimensions, Singapore and Australia contrasted sharply on the power distance and individualism dimensions. Singapore is ranked high on power distance and low on individualism while Australia is low on power distance and high on individualism.

The scores for power distance and individualism for the two nations reported by Hofstede (1980) are as follows:

Nations	Individualism index	Power distance index
	(Range 12 - 91)	(Range 11-94)
Singapore	20	74
Australia	90	36

The scores for power distance and individualism and a plot of power distance and individualism scores for the countries studied by Hofstede (1984a, p. 391) are given in Appendix A. The plot shows that Singapore is positioned in the high power distance/low individualism quadrant together with other South-East Asian countries which include Malaysia, Philippines, Hong Kong, Korea, Taiwan, Thailand and Indonesia. On the other hand, Australia is positioned in the low power distance/high individualism quadrant together with countries generally regarded as Anglo-American and include the USA, Great Britain, Canada and New Zealand. Singapore is therefore regarded as a surrogate for the Asian block of nations with high power distance/low individualism culture and Australia is regarded as a surrogate for the Anglo-American block of nations with low power distance/high individualism culture.

Secondly, Singapore and Australia are relatively well matched on Hofstede's two other cultural dimensions of uncertainty avoidance and masculinity. A plot of the uncertainty avoidance and masculinity scores for the countries studied by Hofstede (1984a, p. 393) shows that Singapore and Australia are very close to being positioned in the same quadrant on these two dimensions. Australia is located in the weak uncertainty avoidance/masculine quadrant. Although

Singapore is located in the weak uncertainty avoidance/feminine quadrant, it lies on the border of the weak uncertainty avoidance/masculine quadrant. Consequently, as Singapore and Australia are relatively similar on these dimensions, the cultural dimensions of uncertainty avoidance and masculinity are therefore unlikely to influence the results of this study.

Thirdly, respondents in both countries are well versed in English and the difficulties associated with the translation of the questionnaire into other languages were avoided (Chow et al., 1991; Harrison, 1990, 1992, 1993; Hwang, 1989). The same questionnaire can therefore be administered in both countries.

Only Western Australia rather than the whole of Australia was selected for this study. The selection of only Western Australia was to facilitate the ease of follow-ups on late and non-responses.

Selection of Organizations

The studies of Brownell (1982); Brownell and Hirst (1986); Hirst (1987); Hopwood (1972) and Otley (1978) were all based on single organizational samples. Dunk (1991, p. 246) pointed out that "the use of single organizational samples may confound the results of studies because of the possible impact on them of firm effect(s)". Brownell and Dunk (1991) also noted that "while it may be quite straightforward to identify differences between the organizations studied, it is much more difficult to link such difference(s) to the variation in results produced by the two studies" (p. 695-696). Dunk (1991, p. 247) further suggested that random sampling across organizations should be used to promote the generalizability of results. Therefore to ensure the external validity of results in this study, a total of 142 manufacturing companies located in Singapore and Western Australia were sampled.

The selection of companies for both Singapore and Western Australia was randomly sampled from the list of manufacturing firms published in *Kompass: Register of Industry and Commerce of Singapore* (1992) and *Kompass Australia* (1992) respectively. Manufacturing companies of all industries were chosen to determine if Harrison's (1992) conclusions could be generalized to the manufacturing industries where the use of budgets are common. (Harrison's study was based on a sample selected only from the department and retail industry). Only companies with more than 100 employees each were selected as companies with less than 100 employees each were unlikely to be organized on a work unit (departmental) basis (Brownell & Dunk, 1991). The selection of companies organized on a work unit basis is important as the measurement instruments (Van de Ven & Delbecq, 1974) used in this study to measure task characteristics are intended for use on a work unit basis. The Singaporean sample, consisting of 80 companies and representing about 15% of all manufacturing firms in Singapore with more than 100 employees each, was considered adequate to ensure external validity. The Western Australian sample, consisting of 62 companies and representing all the manufacturing companies with more than 100 employees each, was considered adequate to balance the aforementioned subsample of Singapore-located companies.

Selection of Respondents

Three respondents from three different functional areas which include the heads of production, sales/marketing and a staff functional area (e.g., personnel, administrative, or accounting), were selected from each company. Only functional heads were selected as they were regarded as surrogates for the work units. The selection of only the functional heads was to ensure the independence of the respondents. In all but one case, the heads of three different functional areas, namely, production, sales/marketing and a staff function (e.g., personnel, administration, accounting) were selected to determine if Harrison's (1992) conclusions could

be generalized to all functional areas². Harrison's had restricted his study only to the buying function.

The selected companies for both Singapore and Western Australia were contacted by telephone to obtain the names of the functional heads. This would ensure that the questionnaire would be mailed directly to and answered only by the functional heads. In a few cases, the selected companies were only willing to supply the names of only two or one functional heads instead of the three requested. A questionnaire with a covering letter explaining the objectives of the study and assuring anonymity of response was addressed and mailed to each respondent personally. Both copies of the letter for the Singaporean and Western Australian subsamples are given in Appendix B. A self-paid addressed envelope was also enclosed for each participant to enable the completed questionnaire to be returned directly to the researchers in Singapore and Western Australia respectively. For the Singaporean subsample, due to the time pressure to collect the questionnaire back quickly, follow-up of the questionnaire was by telephone calls to those who had not responded after 3 weeks of mailing. For the Western Australian subsample, follow-up was by a reminder letter to each of those respondents who had not responded after 3 weeks of mailing. The reminder letter for the Western Australian sample is given in Appendix B. The response rate obtained for both subsamples are discussed in chapter 5.

Measurement Instruments

The instruments to measure the variables are included in the questionnaire in Appendix C. The instruments chosen to measure the dependent variables of job related tension and managerial performance are discussed first followed by those selected to measure the independent variables of budgetary participation, budget emphasis, task uncertainty (Withey et al., 1983 and

Van de Ven & Delbecq, 1974), task difficulty, task variability, power distance and individualism.

Job related tension

Tension can be defined as a response to stressful situations (Indik, Seashore, & Slesinger, 1964, p. 26-27). Job related tension "represents tension arising from psychologically stressful circumstances in the job environment" (Kenis, 1979, p. 712). Job related tension is reflected in those aspects of the job which give rise to frustration and anxiety (Hopwood, 1973, p. 55). The instrument used to measure this variable is the 15-item Job Related Tension index (Kahn, Wolfe, Quinn, Snoek & Rosenthal, 1964) developed by the Institute for Social Research at the University of Michigan. The scores on this index are positively correlated with role conflict, role ambiguity and anxiety (Kahn et al., 1964, p. 424 - 427).

A 7-point Likert scale was used and respondents were asked to rate how frequently they were "bothered" by stressful work situations, (e.g., not having sufficient authority to carry out one's job, unclear of one's responsibilities and feeling that the workload is too heavy).

The job related tension index has been used extensively in previous studies on superiors' evaluative styles (Bottger & Hirst, 1988; Brownell & Hirst 1986; Harrison, 1992; Hirst, 1983; Hopwood, 1972; Otley, 1978). This scale has been described as being "sensitive to at least some of the more dysfunctional consequences of tension" (Hopwood, 1973, p. 55). The use of the same instrument as Brownell and Hirst (1986) would also facilitate comparisons of results of this study with those of Brownell and Hirst's (1986) study. The questions on the job related tension index are numbers 65 to 79 inclusive in the questionnaire in Appendix C.

Managerial performance

Managerial performance was obtained using the nine dimensional self-rating measure developed by Mahoney et al. (1963, 1965). The instrument consists of a single overall performance rating together with ratings on eight other subdimensions of managerial activities. The eight subdimensions are planning, investigating, coordinating, evaluating, supervising, staffing, negotiating, and representing. Respondents were asked to rate on a 7-point Likert scale for each of the eight subdimensions of performance and also for the single overall rating. The questions on managerial performance are numbers 37 to 45 inclusive in the questionnaire in Appendix C.

The issue of whether to use superior ratings or self ratings has been contested in the literature. Some researchers have argued that self ratings of performance are likely to be more lenient (higher mean values) and show a lower variability (restricted range) in the scores than superior ratings (Heneman, 1974; Mia, 1988, 1989; Parker, Taylor, Barrett & Martens, 1959; Prien & Liske, 1962; Thorton, 1968). Others, however, disagree with these claims. For example, Heneman (1974) found that supervisory ratings of performance were more lenient than self-ratings. Also Parker et al. (1959) and Kirchner (1965) have both found moderate agreement between supervisory ratings and self ratings of performance. In addition, researchers have found that halo errors (intercorrelations among performance subdimensions) are more common with superior ratings than with self ratings (Heneman 1974; Lawler, 1967; Miner, 1968; Nealey & Owen, 1970; Prien & Liske, 1962; Thornton, 1968; Williams & Seiler, 1973). Govindarajan (1984) argued that one important advantage of using objective measures of performance (which are obtained from formal corporate records) in contrast with self-report measures to assess performance, is that the performance measures can be confirmed by other researchers, although "it is almost impossible to get properly matched objective data in a cross-organizational study" (p. 130). Venkatraman and Ramanujam (1987) argued that neither of the measures are superior

to the other "in terms of consistently providing valid and reliable" measures of performance (p. 110).

Brownell chose the Mahoney et al. (1963, 1965) measure because it "clearly captures the multidimensional nature of performance without introducing the problem of excessive dimensionality" (Brownell, 1982, p. 17-18). For example, Kavanagh, MacKinney, and Wolins (1971) employed a twenty-dimension performance rating scale and obtained disappointing results on a discriminant validity test. Independent assessments of the Mahoney et al. measure have also provided evidence to support the reliability and validity of the measure's sound development (Brownell & McInnes, 1986; Govindarajan, 1986; Heneman, 1974; Penefield, 1974). Apart from Brownell and Hirst (1986) and Brownell and Dunk (1991), the scale has also been used extensively and found to be reliable in other studies (Brownell, 1982; Brownell & McInnes, 1986; Dunk, 1990; Frucot & Shearon, 1991; Gul, 1991; McInnes & Ramakrishnan, 1991). Consistent with Brownell and Hirst (1986) and Brownell and Dunk (1991), only the score of the overall effectiveness dimension was used for managerial performance in this study.

Budget emphasis

A decision as to which supervisory evaluative style instrument to use had to be made as Brownell and Hirst (1986) had used a ten-item instrument while Brownell and Dunk (1991) had used Hopwood's (1972) eight-item instrument. Hopwood's (1972) original instrument comprises the following seven items:

- (i) cooperation with colleagues
- (ii) concern with costs
- (iii) how well (the subordinate) got along with the boss
- (iv) concern with quality
- (v) meeting the budget

- (vi) attitude towards work and company
- (vii) ability to handle employees

Respondents are asked to rank order the three most important criteria that they think their superiors used to evaluate their performance. Hopwood (1973) used the rankings to capture the following four categories of superiors' performance evaluation styles:

- (i) Budget constrained style meeting the budget, but not concern with costs, ranked among the top three criteria;
- (ii) Budget-profit style both meeting the budget and concern with costs ranked among the top three criteria;
- (iii) Profit conscious style concern with costs, but not meeting the budget ranked among the top three criteria;
- (iv) Non-accounting style neither meeting the budget nor concern with costs ranked among the top three criteria.

Brownell and Hirst (1986) made some modifications to Hopwood's original measure. They split the single Hopwood's item "My attitude toward my work and company" into two items. This is because a superior may place different emphasis on each criterion when evaluating subordinates' performance (Brownell & Hirst, 1986, p. 243). Hopwood original question may therefore have been seen as "double-barrelled" (Harrison, 1990, p. 129). Brownell and Hirst (1986) also added a new item "How well I cooperate with individuals outside the firm". This was intended to evaluate the importance of this item between production and non-production tasks. Since an important purpose of this study was the replication of Brownell and Hirst's (1986) study, the use of the same instrument for budget emphasis was considered vital for interpreting the results. The 10-item instrument, seven original items developed by Hopwood, two modified items and one new item added by Brownell and Hirst (1986) was used in this study to be consistent with Brownell and Hirst (1986). Since the 10-item instrument also

incorporates all the eight items included in the instrument used in Brownell and Dunk (1991), it could also be regarded as consistent with Brownell and Dunk (1991). Furthermore, since only the scores of the two accounting based items "Concern with cost" and "Meeting the budgets" were used to evaluate budget emphasis, the difference in the number of non-accounting items in the instrument was unlikely to cause any major problem. The 10-item on budget emphasis for this study are numbers 21 to 30 inclusive in the questionnaire in Appendix C.

A 7-point Likert scale was used. The rating rather than the ranking forms was used as the former permits the evaluative styles to be measured as a continuum (Brownell & Dunk, 1991; Govindarajan, 1984; Harrison, 1992; Otley, 1978). It also avoids the problem encountered by Brownell (1982) when he noted that many of his respondents failed to complete the questionnaire properly when it was asked in a rank order form. The rating form was also consistent with that used by Brownell and Dunk (1991). Since Hopwood (1972) found consistency between the rating and ranking results, any difference caused by the rating form used in this study and the ranking form used by Brownell and Hirst (1986) was unlikely to cause any significant problem.

The overall score for the measure was based on the two accounting based items of "Concern with costs" and "Meeting the budget". This is consistent with Brownell and Dunk (1991). A high overall score would indicate high budget emphasis and a low overall score, a low budget emphasis. Brownell and Hirst (1986) had also combined the Budget Constrained style and the Budget-Profit style into a single high budget emphasis category.

Budgetary participation

Participation refers to the extent of influence and involvement that an individual employee has on a final budget which is jointly set (Brownell, 1981; Milani, 1975). The variable was measured using a six-item instrument developed by Milani (1975). Respondents were asked to rate on a 7-point Likert scale their influence, involvement in, and contribution to the budget setting process. The questions on budgetary participation are numbers 31 to 36 inclusive in the questionnaire in Appendix C. The overall score for the measure was obtained by adding the scores of the six items.

This instrument was also used by Brownell and Hirst (1986) and Brownell and Dunk (1991). It has also been used and tested extensively in other studies and has provided high internal reliability (Brownell, 1981, 1982, 1985; Brownell & McInnes, 1986; Chenhall, 1986; Chenhall & Brownell, 1988; Dunk, 1989; Frucot & Shearon, 1991; Mia, 1988, 1989).

Previous studies have also provided evidence to support the validity of this instrument by correlating it with Hofstede's (1967) single choice instrument. Significant positive correlations were reported. For example, Brownell (1983) reported a correlation of 0.74 ($p \leq 0.01$); Brownell and McInnes (1986), 0.75 ($p \leq 0.01$); Brownell and Hirst (1986), 0.75 ($p \leq 0.01$) and Brownell (1985), 0.57 ($p \leq 0.01$).

Task uncertainty (Withey et al., 1983)

The nine-item instrument developed by Withey et al. (1983) was employed to evaluate task uncertainty. The instrument has been employed by Brownell and Hirst (1986) and represents an additive scale for the composite measure of task difficulty and task variability. They had used the scale because it is consistent with Thompson's (1967) definition of task uncertainty and

because it had been tested and found to be reliable by Withey et al. (1983). Since an important purpose of this study was the replication of Brownell and Hirst's (1986) study, the use of the same instrument for task uncertainty was considered vital for interpreting the results of the tests for hypothesis H_{01} , H_{A1} , H_{02} and H_{A2} .

A 7-point Likert scale was used. The overall score for the measure is obtained by adding the scores of the nine items. The Withey et al. (1983) instrument for task uncertainty are numbers 46, 47, 55 to 57, 60 to 63 inclusive in the questionnaire in Appendix C.

Task uncertainty (Van de Ven & Delbecq, 1974)

This variable refers to an individual employee's belief about the completeness of the cause-effect knowledge in connection with task performance (Thompson, 1967). Apart from measuring task uncertainty with the instrument developed by Withey et al. (1983), which would replicate the Brownell and Hirst's (1986) study, task uncertainty was also evaluated in this study with the 14-item composite measure developed by Van de Ven and Delbecq (1974). It encompasses the two subscales of "task difficulty" and "task variability". This instrument had been used by Hirst (1983) and Brownell and Dunk (1991). Although, Brownell and Dunk have expressed reservation on the validity of combining the two subdimensions of task variability and task difficulty into a single construct, this combined measure was still used in this study. Since the purpose of this thesis was to study the impact of culture on the research on budgetary participation, the confirmations of the results (whether significant or not significant) of as many studies as possible in the area of budgetary participation, would increase the reliability of Harrison's (1992) suggestion that research results relating to budgetary participation could be generalized between high power distance/low individualism and low power distance/high individualism culture. The use of Van de Ven and Delbecq

(1974) instrument for task uncertainty would enable the Brownell and Dunk (1991) study to be replicated with a pooled sample of subjects from two different cultures.

The questions on Van de Ven and Delbecq's (1974) instrument for task uncertainty are numbers 46 to 59 inclusive in the questionnaire in Appendix C.

Task variability (Van de Ven & Delbecq, 1974)

Task variability refers to the number of exceptional cases encountered in the work requiring different methods or procedures for doing the work (Perrow, 1967). Task variability could be measured as the stability and uniformity of inputs and outputs (Hikson, Pugh & Pheysey, 1969; Thompson, 1967; Woodward, 1965). It has also been measured as routinization, repetitiveness, stability, or rigidity of the work (Delbecq, Shull, Filley & Grimes, 1969; Grimes, Klien & Shull, 1970; Hage & Aiken, 1969; Litwak, 1961).

This variable, a subdimension of task uncertainty, was measured by a seven-item instrument developed by Van de Ven and Delbecq (1974). The use of this scale would enable the Brownell and Dunk's (1991) study on task variability to be replicated.

The measure required respondents to rate their perceived level of task variability on a 7-point Likert-scale. The overall score for task variability was obtained by adding the scores of the seven items. The items on task variability are numbers 53 to 59 inclusive in the questionnaire in Appendix C.

Support for the validity of this measure was provided by Withey et al. (1983). They found high correlation with Sims, Szilagyi and Keller's (1976) Job Characteristics Inventory which they argued was a validated measure of task variability. They also found substantial agreement

between the scale scores and the ratings given by external raters for task variability in work-units. Withey et al. (1983) recommended that it be used in future research because of the scale's "psychometric" properties.

Task Difficulty (Van de Ven & Delbecq, 1974)

Task difficulty refers to the degree of complexity of the search process in performing a task, the amount of thinking time required to solve work related problems, and the body of knowledge that provides guidelines for performing the tasks (Perrow, 1967).

This variable was measured using a seven-item instrument developed by Van de Ven and Delbecq (1974). This subscale was tested by Withey et al. (1983) along with five other similar scales developed by Hage and Aiken (1969); Lynch (1974); Glisson (1978); Van de Ven and Ferry (1980) and Daft and Macintosh (1981). The Van de Ven and Delbecq's (1974) and the Daft and Macintosh's (1981) scale were regarded by Withey et al. (1983) as the two most appropriate scales for research as they both have reasonable measurement properties. In addition, the Van de Ven and Delbecq's (1974) scale was regarded by Withey et al. as "one of the better instruments for measuring Perrow's technology variables... and showed substantial agreement with external raters and moderately high internal consistency" (Withey et al., 1983, p. 57). The instrument was used by Hirst (1983); Brownell and Dunk (1991) and Mia (1987, 1989). Since task difficulty was an important variable in Brownell and Dunk's (1991) study, the same scale instrument was used in this study.

The measure required respondents to rate their perceived level of task difficulty on a 7-point Likert scale. The overall score for task difficulty was obtained by adding the scores of all the seven items. The questions on task difficulty are numbers 46 to 52 inclusive in the questionnaire in Appendix C.

Power Distance

This dimension on power distance was measured based on responses to three items from a questionnaire developed by Hofstede (1980) which deals with the following:

1. Subordinates' perception that employees (their colleagues) do not dare to express disagreement with managers (superiors).
2. Subordinates' perception that they have an authoritarian or paternalistic superior.
3. Subordinates' own preference for the desirable style of decision making by their superior.

The index for a nation's power distance is high if the subordinates in that nation (i) perceive their superiors as being autocratic or paternalistic in their decision-making; (ii) prefer having such superiors and (iii) perceive that employees are afraid to express disagreement with their superiors. A nation's power distance index will be low in the reverse situation.

This measurement instrument for power distance has been used in previous studies (e.g., Chow et al., 1991; Harrison, 1990, 1992, 1993; Hwang, 1989). The questions to measure the cultural dimension of power distance are numbers 86 to 88 in the Questionnaire in Appendix C.

The power distance index (PDI) for each nation was computed based on the following formulae developed by Hofstede (1980, p. 103):

$$\begin{aligned}
 \text{PDI} = & 135 - 25(\text{mean score of "Employee Afraid To Disagree" question or Q.88}) \\
 & + (\% \text{ of respondents perceiving manager 1 or 2 in Q.87}) \\
 & - (\% \text{ of respondents preferring manager 3 in Q.86})
 \end{aligned}$$

The theoretical range of the index is from -90 (where all employees are afraid to disagree, no one perceives manager 1 or 2, and everyone prefers manager 3) to 210 (where all employees are not afraid to disagree, everyone prefers manager 1 or 2 and no one prefers manager 3). The observed range for the 40 countries reported by Hofstede (1980) was from 11 to 94.

Individualism

The cultural dimension of individualism was computed based on the measurement instrument developed by Hofstede and was based on the responses to questions on the following six work goals in choosing or describing an ideal job (Hofstede, 1980, p. 220-221, 237-242):

1. Personal time - Have a job which leaves you sufficient time for your personal or family life.
2. Freedom - Have considerable freedom to adopt your own approach to the job.
3. Challenge - Have challenging work to do - work from which you can get a personal sense of accomplishment
4. Use of skills - Fully use your skills and abilities on the job.
5. Physical conditions - Have good physical working conditions (good ventilation and lighting, adequate work space, etc.).
6. Training - Have training opportunities (to improve skills and abilities on the job)

The importance of the first three work goals (personal time, freedom and challenge) is positively related to the individualism index and the importance of the remaining three (use of skills, physical conditions, and training) is negatively related to the individualism index.

The first three work goals emphasize an individual's independence of the organization, while the remaining three emphasize the individual's dependence on the organisation (Hofstede, 1980, p. 220-221).

The individualism index (IDV) for each nation in Hofstede's (1980) study was computed from a factor analysis. A factor analysis of the standardized mean scores by Hofstede's (1980, p. 220) on his 14 work goals questions showed that two factors were able to explain almost one-half of the variance in country mean scores. The factor on which his individualism index was based on was able to account for 24% of the variance and this factor was composed mainly of only 6 of the 14 work goals. These six work goals were personal time; freedom to adopt own approach to the job; challenging work; opportunity to use one's skills; physical working conditions; and training opportunities. Consequently, only questions relating to these six work goals were included in this study. This six work goal approach was also used by Harrison (1990, 1992, 1993) who found that they were able to explain 92% of the variation in Hofstede's (1980) 40-nation individualism index values. The six items are located as numbers 80 to 85 inclusive in the questionnaire in Appendix C.

Since only six items relating to individualism were included in this study, the procedures used by Harrison (1992) to compute the individualism index for the two countries was adopted (Harrison had also only used the six major work goals). This involved fitting a regression model to Hofstede's (1980) data base and the resultant coefficients were applied to the respective mean raw scores obtained by this study for the six work goal items to calculate the individualism index scores for Singapore and Western Australia.

The steps taken by Harrison were as follows: Firstly, a new matrix table was constructed based on Hofstede's (1980, p. 415) matrix table which shows the 14 work goals and the standardised work goal importance scores for each of the 40 countries. The standardization process for the

six work goals item was reversed using the mean and standard deviation of the raw score across all 14 work goals.

A multiple regression was then run between the individualism index values and for all the six work goals. The resulting model was able to explain 92% of the variations in the individual index values for the 40 countries studied by Hofstede (1980). The coefficients produced by this model and shown in the following regression were used to compute the individualism values for this study:

$$\begin{aligned} \text{IDV} = & -41.562 (\text{mean score "personal time" Q.80}) + 43.678 (\text{mean score} \\ & \text{"training" Q.84}) - 24.587 (\text{mean score "challenge" Q.81}) - 26.298 (\text{mean} \\ & \text{score "freedom" Q.83}) + 39.495 (\text{mean score "physical conditions"} \\ & \text{Q.82}) + 26.511 (\text{mean score "use of skills" Q.85}) + 14.680 \end{aligned}$$

The full statistical results for the regressions are shown in Appendix F.

CHAPTER 5

Results

Introduction

This chapter will first discuss the response rates of the questionnaire survey for both the Singaporean and Western Australian subsamples. Next, descriptive statistics relating to the variables for the Singaporean subsample, Western Australian subsample and the pooled sample are presented. This is followed by an assessment of the internal reliability of the instrument used to measure the variables in the study. Lastly, the results of the hypotheses tests are presented and discussed.

Response Rate

Singaporean subsample

Of the 240 questionnaires that were distributed to the manufacturing companies located in Singapore, a total of 129 were returned yielding a response rate of 53.8%. Of the 129 responses, 3 were excluded from the study for failure to complete the various aspects of the questionnaire and another 14 for unreliable responses³. A further 5 responses were excluded from the study as the respondents were of non South-East Asian origin and had lived in Singapore for less than 10 years. Their countries of origin were Japan, Germany, Australia, USA and U.K. These respondents might have cultural beliefs that were different from those of the other respondents from the Singaporean subsample. There were 16 respondents from Malaysia and one from

10 and 20 years, and 2 for more than 5 years. The respondent from Hong Kong had lived in Singapore for more than 30 years. Both Malaysia and Hong Kong fall into the same cultural quadrant of high power distance/low individualism as Singapore (Hofstede, 1984a). In addition, the length of stay of these respondents in Singapore was also likely to influence them to adopt or be sympathetic to the Singapore culture. Consequently, all their responses were included in the study. This leaves the study with 107 useable responses for the Singaporean subsample.

Western Australian subsample

A total of 170 questionnaires were distributed to the manufacturing companies located in Western Australia, of which 101 were returned, giving a response rate of 59.4%. Of the 101 responses, only 2 were excluded because of incomplete data and 6 for unreliable responses⁴. A further 3 were excluded from the study because the respondents were of non-Anglo-Saxon origin and had lived in Australia for less than 10 years. They were from Netherlands, Germany and Ireland. There were nine other respondents whose countries of birth were other than Anglo-American. Of these, two were from Italy and had lived in Australia for more than 40 years; one each from Malaysia, Peru, Chile and India, and all had lived in Australia for more than 20 years; one from Switzerland and had lived in Australia for more than 15 years and 2 from Zimbabwe, and both had lived in Australia for more than 10 years. Because these respondents had all lived in Australia for more than 10 years, their responses were included in the study. Thirty respondents had countries of birth that were from the Anglo-American block. These were Scotland (6), England(15), New Zealand (5), USA(2) and UK(2). Seven had lived in Australia for more than 20 years, 12 for more than 15 years, 6 for more than 10 years, 3 for more than 5 years and 2 for less than 5 years. All their responses were included in the study because their countries of birth were in the same cultural quadrant as Australia. This leaves the study

Pooled sample

Combining the Singaporean and Western Australian subsamples together provides the study with a pooled sample of 197 useable responses or 48% of the total sample of 410 selected. The 107 useable responses from the Singaporean subsample and the 90 from the Western Australian subsample represent 54% and 46% of the pooled sample respectively. The difference in number between the two subsamples is small. Hence the pooled sample is adequately represented by respondents from the two different cultural blocks.

Demographic Data

The mean age of the respondents was 38.4 for the Singaporean subsample, 42.2 for the Western Australian subsample and 40.1 for the pooled sample. On average, the Singaporean respondents had held their current positions for 4.7 years, the Western Australian respondents for 3.7 years and the pooled sample for 4.2 years. The Singaporean respondents had been employed by their respective companies for 7.5 years; for the Western Australian respondents, it was 9.5 years; and for the pooled sample, it was 8.4 years. The average length of experience in the areas they managed was 9.2 years for the Singaporean respondents, 11.6 years for the Western Australian respondents and 10.3 years for the pooled sample. The average number of employees in their areas of responsibility were 113 for the Singaporean subsample, 49 for the Western Australian subsample and 84 for the pooled sample. In addition, 90% of the respondents in Singapore had tertiary qualifications and over 75% of the respondents in Western Australian had similar qualifications. These demographic data suggest that the average respondent was highly qualified, experienced and holding highly responsible positions.

Nonresponse Bias

The presence of nonresponse bias was investigated by the test suggested by Oppenheim (1966, p. 34). The subsamples were tested separately because there was a difference of about a month in the administration of the two subsamples. A Student t-test was applied to the overall mean score of each dependent and independent variables of the first 10 responses received and the last 10 responses received (each representing about 10% of the total responses) for each subsample. No significant differences in the mean scores between the early and late responses were found in both subsamples.

Descriptive Statistics and Scale Reliability Measures

The following section presents the descriptive statistics for the dependent and independent variables for the Singaporean subsample, Western Australian subsample and pooled sample. The reliability of the instruments used to measure the variables in the study is also reported in this section.

Job related tension

The descriptive statistics for the dependent variable, job related tension, are presented in Table 1. The Cronbach alpha (Cronbach, 1951) obtained for this study was 0.88 for the Singaporean subsample, 0.85 for the Western Australian subsample and 0.87 for the pooled sample. The reliability results were higher than those reported in Harrison's (1992) study (0.82 for the Singaporean subsample, 0.80 for the Australian subsample and 0.81 for the pooled sample).

Table 1

Descriptive Statistics for Job Related Tension

	Mean	Standard deviation	Theoretical range		Actual range	
			Min	Max	Min	Max
Singapore	47.7196	12.2342	15	105	15	80
Western Australia	42.9889	13.1084	15	105	17	75
Pooled	45.5584	12.8279	15	105	15	80

Managerial performance

The descriptive statistics for the measure of managerial performance, including each of the eight performance subdimensions, for the Singaporean, Western Australian and pooled samples are shown in Table 2 , 3 and 4 respectively.

Mahoney et al. (1963, p. 106-107) have indicated in their developmental work that the eight dimensions should be independent and should explain about 55% of the variance in the overall rating with the remaining 45% of the variance being explained by job-specific factors.

To test the first claim on dimensional independence, the approach suggested by Pindyck and Rubinfeld (1976, p. 68) was used in this study. They suggested that multicollinearity among independent variables may be a concern if the correlation between two of the independent variables (in this case, the dimensions of performance) is larger than the correlation of either or both with the dependent variables (in this case, the overall performance rating). Table 5

provides a matrix of the intercorrelation among the eight subdimensions of performance and the correlations between the overall performance rating and each of the eight separate subdimensions for the pooled sample. Of the 28 possible comparisons, only 8 violated this criterion. Out of the 8 violations only 2 (0.57 for supervising and 0.61 for staffing) were much higher than the correlations of the overall performance rating and the respective separate subdimensions. The eight dimensions were therefore reasonably independent.

Table 2

Descriptive Statistics for Managerial Performance - Singaporean Subsample

Dimensions	Mean	Standard deviation	Theoretical range		Actual range	
			Min	Max	Min	Max
Overall	5.8411	0.8144	1	7	4	7
Planning	5.7570	1.0172	1	7	1	7
Investigating	5.6636	1.1154	1	7	2	7
Coordinating	5.8131	0.9628	1	7	2	7
Evaluating	5.5794	1.0992	1	7	1	7
Supervising	5.4393	1.2452	1	7	1	7
Staffing	5.2897	1.2287	1	7	1	7
Negotiating	5.5514	1.1179	1	7	3	7
Representing	5.7103	0.8579	1	7	4	7

Table 3

Descriptive Statistics for Managerial Performance - Western Australian Subsample

Dimensions	Mean	Standard deviation	Theoretical range		Actual range	
			Min	Max	Min	Max
Overall	5.9222	0.7225	1	7	4	7
Planning	5.8222	0.8941	1	7	4	7
Investigating	5.8111	0.8466	1	7	3	7
Coordinating	5.8556	1.0007	1	7	2	7
Evaluating	5.5333	1.0515	1	7	1	7
Supervising	5.5333	1.2086	1	7	1	7
Staffing	5.5556	1.2281	1	7	1	7
Negotiating	5.4889	1.2564	1	7	1	7
Representing	6.0222	0.8477	1	7	3	7

To test the second claim, a multiple regression was computed by regressing the overall rating dimensions on the eight performance dimensions. The eight subdimensions were able to explain 58% of the variance in the overall effectiveness for the Singaporean subsample ($F_{8,98} = 17.17, p \leq 0.001$); 45% for the Western Australian subsample ($F_{8,81} = 8.10, p \leq 0.001$) and 50% for the pooled sample ($F_{8,188} = 23.17, p \leq 0.001$). These results were close to the 55% suggested by the Mahoney et al. (1963). Consistent with Brownell and Hirst (1986) and Brownell and Dunk (1991), only the overall performance rating score was used for managerial performance in the data analysis.

Table 4

Descriptive Statistics for Managerial Performance - Pooled Sample

Dimensions	Mean	Standard deviation	Theoretical range		Actual range	
			Min	Max	Min	Max
Overall	5.8782	0.7729	1	7	4	7
Planning	5.7868	0.9611	1	7	1	7
Investigating	5.7310	1.0019	1	7	2	7
Coordinating	5.8325	0.9780	1	7	2	7
Evaluating	5.5584	1.0752	1	7	1	7
Supervising	5.3909	1.2266	1	7	1	7
Staffing	5.4112	1.2324	1	7	1	7
Negotiating	5.5228	1.1805	1	7	1	7
Representing	5.8528	0.8652	1	7	3	7

Table 5

Table of Intercorrelations Among Performance Dimensions - Pooled Sample

	1	2	3	4	5	6	7	8
1. Planning								
2. Investigating	0.48							
3. Coordinating	0.62	0.49						
4. Evaluating	0.53	0.43	0.52					
5. Supervising	0.31	0.40	0.37	0.57				
6. Staffing	0.28	0.32	0.37	0.51	0.61			
7. Negotiating	0.36	0.32	0.36	0.34	0.41	0.55		
8. Representing	0.44	0.50	0.44	0.40	0.41	0.51	0.47	

Note: r significant at $p \leq 0.001$

Correlations Between Overall Performance and the Separate Dimensions of Mahoney et al.'s Measure

	Individual Performance Dimensions							
	1	2	3	4	5	6	7	8
Overall Performance	0.56	0.52	0.47	0.47	0.48	0.48	0.43	0.51

Budget emphasis

The descriptive statistics for the measure of budget emphasis are shown in Table 6. The overall score for this measure was obtained by summing the scores of the two criteria of "Meeting the budget" and "Concern with cost". The legitimacy of this summing procedure is dependent on a significant correlation between the responses to these two criteria (Brownell, 1985, p. 505). In this study they correlated at 0.52 (significant at $p \leq 0.001$).

Table 6

Descriptive Statistics for Budget Emphasis

	Mean	Standard deviation	Theoretical range		Actual range	
			Min	Max	Min	Max
Singapore	11.8131	2.0792	2	14	2	14
Western Australia	12.2667	1.7914	2	14	2	14
Pooled	12.0203	1.9613	2	14	2	14

Budgetary participation

Descriptive statistics for the budgetary participation measure are presented in Table 7. The Cronbach alpha values (Cronbach, 1951) of 0.91 obtained for the Singaporean subsample, 0.90 for the Western Australian subsample and 0.91 for the pooled sample indicate high internal reliability and compare favourably with the alpha of 0.89 obtained by Brownell and Hirst (1986) and 0.88 obtained by Brownell and Dunk (1991). Similar reliability coefficients for the scale

were also reported in other studies. For example, Dunk (1989) obtained an alpha of 0.86; Harrison (1992), 0.89; and Mia (1988, 1989), 0.89 and 0.91, respectively.

Table 7

Descriptive Statistics for Budgetary Participation

	Mean	Standard deviation	Theoretical range		Actual range	
			Min	Max	Min	Max
Singapore	30.7477	7.7692	6	42	6	42
Western Australia	32.5333	7.6675	6	42	6	42
Pooled	31.5635	7.7547	6	42	6	42

Task uncertainty (Withey et al., 1983)

Descriptive statistics for the measure of task uncertainty (Withey et al., 1983) are reported in Table 8. The Cronbach alpha values (Cronbach, 1951) obtained for this study were 0.84 for the Singaporean subsample, 0.80 for the Western Australian subsample and 0.83 for the pooled sample. These results are comparable to the 0.82 obtained by Brownell and Hirst (1986).

Task uncertainty (Van de Ven & Delbecq, 1974)

Descriptive statistics for the measure of task uncertainty (Van de Ven & Delbecq, 1974) are shown in Table 9. The Cronbach alpha values (Cronbach, 1951) obtained in this study were

0.61 for the Singaporean subsample, 0.72 for the Western Australian subsample and 0.66 for the pooled sample.

Table 8

Descriptive Statistics for Task Uncertainty (Withey et al., 1983)

	Mean	Standard deviation	Theoretical range		Actual range	
			Min	Max	Min	Max
Singapore	36.6729	9.0050	9	63	18	56
Western Australia	39.9111	8.5389	9	63	11	58
Pooled	38.1523	8.9207	9	63	11	58

Table 9

Descriptive Statistics for Task Uncertainty (Van de Ven & Delbecq, 1974)

	Mean	Standard deviation	Theoretical range		Actual range	
			Min	Max	Min	Max
Singapore	55.9159	8.1589	14	98	35	78
Western Australia	57.0111	9.7848	14	98	28	82
Pooled	56.4162	8.9317	14	98	28	82

Task variability (Van de Ven & Delbecq, 1974)

Descriptive statistics for the measure of task variability (Van de Ven & Delbecq, 1974) are shown in Table 10. The internal reliability for this measure using Cronbach alpha (Cronbach, 1951) was assessed at 0.67 for the Singaporean subsample, 0.73 for the Western Australian subsample and 0.69 for the pooled sample which are close to 0.76 obtained by Brownell and Dunk (1991).

Table 10

Descriptive Statistics for Task Variability (Van de Ven & Delbecq, 1974)

	Mean	Standard deviation	Theoretical range		Actual range	
			Min	Max	Min	Max
Singapore	31.6542	5.8827	7	49	16	48
Western Australia	33.0444	6.7623	7	49	15	48
Pooled	32.2893	6.3215	7	49	15	48

Task difficulty (Van de Ven & Delbecq, 1974)

Descriptive statistics for the measure of task difficulty are shown in Table 11. The Cronbach alpha values (Cronbach, 1951) obtained in this study were 0.35 for the Singaporean subsample, 0.57 for the Western Australia subsample and 0.47 for the pooled sample. The reliability coefficients obtained in other previous studies for this scale have also been moderate. For example, the Cronbach alpha obtained by Brownell and Dunk (1991) was a moderate 0.57.

Another study by Mia (1987) with this scale achieved an alpha value of only 0.55. Since an important objective of this study was to determine the effect of culture, the same scale used by Brownell and Dunk (1991) was used in this study to measure task difficulty to ensure that the results were not confounded by a change in instrument.

Table 11

Descriptive Statistics for Task Difficulty (Van de Ven & Delbecq, 1974)

	Mean	Standard deviation	Theoretical range		Actual range	
			Min	Max	Min	Max
Singapore	24.2617	4.4538	7	49	14	33
Western Australia	23.9667	5.2605	7	49	11	37
Pooled	24.1269	4.8286	7	49	11	37

Correlation Matrix for Independent Variables

The Pearson and point-biserial correlations matrix among the independent variables is presented in Table 12. Point-biserial correlations were also used as one of the variables (culture) was dichotomous. As shown in Table 12, the correlations among the independent variables are not high (less than 0.4). In addition, because interaction regression models were used in this study, the approach of centring the independent variables (by using deviation scores) to reduce the correlations between the product terms and the component parts was adopted to further reduce the chance of multicollinearity (see Cronbach, 1987). Tolerance of

greater than 0.1 was achieved for all independent variables in the regression models. Multicollinearity was therefore not considered to be a problem.

Table 12

Correlation Matrix Among Independent Variables

	Budgetary participation	Budget emphasis	Culture
Budget emphasis	0.3602*	1.0000*	
Task uncertainty (Withey et al., 1983)	0.1374*	0.0651*	-0.1813**
Task uncertainty (Vande Ven & Delbecq 1974)	0.1024*	0.0470*	-0.0612**
Task variability	0.1508*	0.1468*	-0.1098**
Task difficulty	-0.0081*	-0.1053*	0.0305**
Culture	-0.1150**	-0.1155**	1.0000**

* Pearson

** Point-biserial

Power Distance Index Values

The power distance index values computed for this study are shown below together with comparisons with the indices calculated by Hofstede (1980) and Harrison (1992).

Power Distance Indices

	Present sample ⁵	Harrison (1992)	Hofstede (1980)
Singapore	60	92	74
Australia*	26	58	36
Difference	34	34	38

*referred to Western Australia for present sample

The power distance index values computed for Singapore and Western Australia were in the same direction as those of Hofstede (1980) and Harrison (1992), even though they were both less than those reported by Hofstede (1980). Hwang (1989) also reported a decrease in power distance index scores for both Singapore and Australia compared with those of Hofstede (1980). He found the power distance index to be 67 for Singapore and 2 for Australia. The absolute difference between the scores of the two countries in this study is comparable to that of Harrison (1992).

Hwang (1989) provided a plausible explanation for the decrease in the power distance indices. Firstly, Hofstede's study was carried out almost 20 years ago with data collected between the period 1967 and 1973 (Hofstede, 1984b, p. 39). Over the last two decades, much emphasis has been given to human equality in the free world which could have reduced the power distance in many countries. Secondly, only two-seventh of Hofstede's sample consisted of managers (Hofstede, 1980, p. 73). Hofstede found that power distance index scores for managers were lower than those for non managers (Hofstede, 1980, Fig. 3.2, p. 105). Both the samples in Hwang's (1989) and the present study consisted only of managers and hence lower power

To test whether the power distance scores for Singapore and Western Australia differed significantly, the power distance scores for the 40 countries studied by Hofstede (1980, p. 104) were treated as the distribution. The standard deviation for this distribution was 20. The difference in the power distance index scores of 34 between Singapore and Western Australia in the present study therefore represented 1.7 standard deviations and was significant at $p \leq 0.0446$ (one-tailed). The results of the present study are therefore consistent with those of Hofstede and confirm that the Singaporean subsample was drawn from a high power distance society and the Western Australian subsample drawn from a low power distance society.

Individualism Index Values

The individualism index values for Singapore and Western Australia are shown below together with those of Harrison (1992) and Hofstede (1980).

Individualism Indices

	Present sample ⁶	Harrison 1992)	Hofstede (1980)	
	Six questions index	Six questions index	Predicted	Actual
Singapore	40	36	15	20
Australia*	60	69	62	90
Difference	20	33	47	70

*referred to Western Australia for present sample

The individualism index scores computed for Singapore and Western Australia in this study were in the same direction as those of Hofstede (1980) and Harrison (1990, 1992, 1993), although the absolute difference between the scores for the two countries was smaller than those reported by Harrison (1992) and Hofstede (1980).

To test whether the individualism index scores for Singapore and Australia differ significantly, Hofstede's (1980, p. 222) individualism index scores for 40 countries were again treated as the distributions by Harrison (1993). The standard deviation for this distribution was 24. The absolute difference in the individualism scores of 20 between Singapore and Western Australia in this study therefore represented 0.8333 standard deviation (approaches significant at $p \leq 0.2000$, one-tailed).

Harrison (1990, 1992, 1993) also found the absolute difference in individualism index scores between Singapore and Australia to be much smaller than that reported by Hofstede (1980). Harrison (1992) reported an individualism index score of 36 for Singapore and 69 for Australia based on the 6 work goal items. Chow et al. (1991) using work goals different from those used in this study, also found that the difference in individualism index scores between Singapore and the USA to be much smaller than that reported by Hofstede (1980). Chow et al. reported an individualism index score of 31 for Singapore and 55 for the USA. The results of this study together with those of Chow et al. (1991) and Harrison (1992) suggest a declining difference in the individualism index score compared with that of Hofstede (1980). Nevertheless, they consistently show that the individualism index scores of the Anglo-American nations to be higher than those of Singapore.

In conclusion, the computations of the power distance indices and individualism indices suggest that the Singaporean subsample was taken from a high power distance/low individualism society and the Western Australian subsample was taken from a low power

proxies for cultures with Singapore representing the Asian block of nations and Western Australia representing the Anglo-American block of nations.

Analysis of Residuals

Analysis of residuals is a useful method of determining the compatibility and the validity of the assumptions of the selected regression model. Specifically, the assumptions underlying regression analysis are that the relationship between the dependent variable and independent variables is linear or approximately linear; the error term has zero mean and constant variance σ^2 ; the errors are uncorrelated and normally distributed (Montgomery and Peck, 1982, p. 57). The normal probability plot of the residuals and plot of the residuals against the corresponding fitted values are commonly presented in the analysis of the residuals.

Appendix D presents the normal probability plot of the residuals of the regression models used in this thesis. From Appendix D, it can be seen that the residuals of each model are fairly normally distributed, as the points are generally located along a straight line. Hence the normality assumption is not violated in the regression models.

Appendix E gives the plot of the residual against the corresponding fitted (predicted) values. No plot indicated any evidence of heteroscedasticity as the plots were well distributed within the horizontal bands, and therefore indicating that the regression models were well specified.

The results of the analysis of the residuals indicate the adequacy of the multiple linear regression models used in this thesis as the assumptions of the models were satisfied by the data. This allows the hypotheses to be tested and adds confidence to the validity of the results obtained.

Results of the Hypotheses Tests

The hypotheses to be tested in this thesis included the independent variables of budget emphasis, budgetary participation, task characteristics (task uncertainty, Withey et al., 1983; or task uncertainty, Van de Ven & Delbecq, 1974; or task variability; or task difficulty) and culture. The dependent variables were job related tension and managerial performance. The following hypotheses were formulated in Chapter 3:

- H₀₁ There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task uncertainty* (Withey et al., 1983) affecting *job related tension*.
- H_{A1} There is a statistically significant three-way interaction between budget emphasis, budgetary participation and *task uncertainty* (Withey et al., 1983) affecting *job related tension*.
- H₀₂ There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task uncertainty* (Withey et al., 1983) affecting *managerial performance*.
- H_{A2} There is a statistically significant three-way interaction between budget emphasis, budgetary participation and *task uncertainty* (Withey et al., 1983) affecting *managerial performance*.
- H₀₃ There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task uncertainty* (Van de Ven & Delbecq, 1974) affecting *job related tension*.

- H_{A3} There *is* a statistically significant three-way interaction between budget emphasis, budgetary participation and *task uncertainty* (Van de Ven & Delbecq, 1974) affecting *job related tension*.
- H₀₄ There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task uncertainty* (Van de Ven & Delbecq, 1974) affecting *managerial performance*.
- H_{A4} There *is* a statistically significant three-way interaction between budget emphasis, budgetary participation and *task uncertainty* (Van de Ven & Delbecq, 1974) affecting *managerial performance*.
- H₀₅ There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task variability* (Van de Ven & Delbecq, 1974) affecting *job related tension*.
- H_{A5} There *is* a statistically significant three-way interaction between budget emphasis, budgetary participation and *task variability* (Van de Ven & Delbecq, 1974) affecting *job related tension*.
- H₀₆ There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task variability* (Van de Ven & Delbecq, 1974) affecting *managerial performance*.
- H_{A6} There *is* a statistically significant three-way interaction between budget emphasis, budgetary participation and *task variability* (Van de Ven & Delbecq, 1974) affecting *managerial performance*.

- H₀₇ There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task difficulty* (Van de Ven & Delbecq, 1974) affecting *job related tension*.
- H_{A7} There is a statistically significant three-way interaction between budget emphasis, budgetary participation and *task difficulty* (Van de Ven & Delbecq, 1974) affecting *job related tension*.
- H_{A7a} Compatible combination of high (low) budget emphasis and high (low) budgetary participation are associated with lower *job related tension* in *low* task difficulty situations.
- H_{A7b} Regardless of the level of budget emphasis, high budgetary participation is associated with lower *job related tension* in *high* task difficulty situations.
- H₀₈ There is *no* statistically significant three-way interaction between budget emphasis, budgetary participation and *task difficulty* (Van de Ven & Delbecq, 1974) affecting *managerial performance*.
- H_{A8} There is a statistically significant three-way interaction between budget emphasis, budgetary participation and *task difficulty* (Van de Ven & Delbecq, 1974) affecting *managerial performance*.
- H_{A8a} Compatible combination of high (low) budget emphasis and high (low) budgetary participation are associated with improved *managerial performance* in *low* task difficulty situations.

- H_{A8b} Regardless of the level of budget emphasis, high budgetary participation is associated with improved *managerial performance* in *high task difficulty* situations.
- H₀₉ The interactive effect between budget emphasis, budgetary participation and *task difficulty* (Van de Ven & Delbecq, 1974) on *job related tension* is *independent* of culture.
- H_{A9} The interactive effect between budget emphasis, budgetary participation and *task difficulty* (Van de Ven & Delbecq, 1974) on *job related tension* is *dependent* of culture.
- H_{A9a} The interactive effect of compatible combination of high (low) budget emphasis and high (low) budgetary participation on *job related tension* in *low task difficulty* situations is *dependent* on culture.
- H_{A9b} The effect of budgetary participation on *job related tension* in *high task difficulty* situations is *dependent* on budget emphasis and culture.
- H₀₁₀ The interactive effect between budget emphasis, budgetary participation and *task difficulty* (Van de Ven & Delbecq, 1974) on *managerial performance* is *independent* of culture.
- H_{A10} The interactive effect between budget emphasis, budgetary participation and *task difficulty* on *managerial performance* is *dependent* of culture.
- H_{A10a} The interactive effect of compatible combination of high (low) budget emphasis and high (low) budgetary participation on *managerial performance* in *low task difficulty* situations is *dependent* on culture.

- H_{A10b}** The effect of budgetary participation on *managerial performance* in *high task difficulty* situations is *dependent* on budget emphasis and culture.

The following model was used to test the three-way interaction between budget emphasis, budgetary participation, task characteristics affecting job related tension and managerial performance in Hypotheses H₀₁ to H₀₈

$$Y_i = b_0 + b_1P_i + b_2B_i + b_3T_i + b_4P_iB_i + b_5P_iT_i + b_6B_iT_i + b_7P_iB_iT_i + e_i$$

(Equation 1)

where:

- Y_i = job-related tension or managerial performance
- P_i = budgetary participation
- B_i = budget emphasis
- T_i = task uncertainty (Withey et al., 1983) for H₀₁ and H₀₂ or
task uncertainty (Van de Ven & Delbecq, 1974) for H₀₃ and H₀₄ or
task variability for H₀₅ and H₀₆ or
task difficulty for H₀₇ and H₀₈
- e_i = error term

Deviation scores based on the actual overall mean scores for all respondents minus the raw scores of the individual respondents were used for all independent variables in the regression model. Low raw scores would have positive deviation scores and high raw scores would have negative deviation scores. The purpose was to (i) reduce the problem of multicollinearity as explained earlier and (ii) facilitate the direction of the coefficient of the two-way interaction

between budget emphasis and participation in low task difficulty situations to be predicted in the test for hypothesis H_{A8a}. The latter will be elaborated upon later on.

To test for three-way interactions in hypotheses H₀₁ to H₀₈, the coefficient b₇ in Equation 1 for each test was tested for statistical significance.

Testing of H₀₁ and H₀₂ : Task uncertainty (Withey et al., 1983)

The results for the three-way interaction between budgetary participation, budget emphasis and task uncertainty (Withey et al., 1983) affecting job-related tension (H₀₁) are presented in Table 13. Table 14 shows the results for the three-way interaction between the same independent variables affecting managerial performance (H₀₂). Hypotheses H₀₁ and H₀₂ were tested by determining whether the coefficients b₇ in Table 13 and Table 14 were significantly different from zero.

As shown in Table 13, b₇ was not significant ($t = -0.18, p \leq 0.8535$). Hence H₀₁ as stated in the null form cannot not be rejected.

Table 13

Results of Regressing Job Related Tension on Budgetary Participation, Budget Emphasis, Task Uncertainty (Withey et al., 1983) and All Interactions (H_{01})

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b_0	46.0179	0.9207	50.00	0.0000
Participation	b_1	0.4156	0.1271	3.26	0.0013
Budget emphasis	b_2	0.8166	0.5321	1.53	0.1265
Task uncertainty	b_3	-0.0075	0.1027	-0.07	0.9419
Participation X budget emphasis	b_4	-0.0385	0.0552	-0.69	0.4867
Participation X task uncertainty	b_5	-0.0296	0.0138	-2.14	0.0334
Budget emphasis X task uncertainty	b_6	0.0407	0.0623	0.65	0.5144
Participation X budget emphasis X task uncertainty	b_7	-0.0013	0.0073	-0.18	0.8535

$$R^2 = 0.099 \quad F_{7,189} = 2.9632 \quad p \leq 0.0057$$

In Table 14, b_7 also failed to reach significance ($t = 0.44$, $p \leq 0.6548$). Hence Hypothesis H_{02} as stated in the null form also cannot be rejected. The lack of significance in the three-way interaction between budgetary participation, budget emphasis and task uncertainty (Withey et al., 1983) affecting job related tension and managerial performance is consistent with the theory (Erownell and Dunk, 1991) that the subdimension of task difficulty rather than task uncertainty may be a more relevant independent variable.

Table 14

Results of Regressing Managerial Performance on Budgetary Participation, Budget Emphasis, Task Uncertainty (Withey et al., 1983) and All Interactions (H₀₂)

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	5.8699	0.0527	0.00	0.0000
Participation	b ₁	-0.0258	0.0073	-3.54	0.0005
Budget emphasis	b ₂	-0.1140	0.0305	-3.74	0.0002
Task uncertainty	b ₃	0.0063	0.0059	1.06	0.2875
Participation X budget emphasis	b ₄	-0.0004	0.0032	-0.13	0.8951
Participation X task uncertainty	b ₅	0.0008	0.0008	1.05	0.2913
Budget emphasis X task uncertainty	b ₆	0.0004	0.0036	0.10	0.9171
Participation X budget emphasis X task uncertainty	b ₇	0.0002	0.0004	0.44	0.6548

$R^2 = 0.186$ $F_{7,189} = 6.1869$ $p \leq 0.0001$

Note that the results of this study are consistent with those of Brownell and Hirst (1986) as far as managerial performance is concerned and is also consistent with the theory developed in this study which argued that task difficulty rather than task uncertainty is the appropriate variable for task characteristic. Hence a significant three-way interaction was not expected.

However the results are inconsistent with those of Brownell and Hirst (1986) as far as job related tension is concerned. They had found significant interaction between budget emphasis,

budgetary participation and task uncertainty (Withey et al., 1983) affecting job related tension. The failure of this study to replicate Brownell and Hirst's (1986) results on job related tension could be due to the sampling method. While this study's sample was derived from senior functional heads from a large number of companies, Brownell and Hirst's sample was made up of line managers from only a single company.

However the failure of this study to replicate the results of Brownell and Hirst (1986) on job related tension was not surprising. As discussed earlier, this study has argued that task difficulty is the more appropriate variable for task characteristic. The use of the Withey et al. (1983) instrument for task uncertainty was therefore not expected to lead to a significant three-way interaction. This results suggest that Brownell and Dunk's (1991) results based on task difficulty may be more generalizable to other organizations compared with those of Brownell and Hirst (1986).

Testing of H_{03} and H_{04} : Task uncertainty (Van de Ven & Delbecq, 1974)

The results for the three-way interaction between budgetary participation, budget emphasis and the composite score of task uncertainty (Van de Ven & Delbecq, 1974) on job related tension (H_{03}) are presented in Table 15. Table 16 shows the results for the three-way interaction between the same independent variables affecting managerial performance (H_{04}).

Again no significant three-way interaction could be found in both cases. The coefficient b_7 in Table 15 has a t-statistics of -1.08 ($p \leq 0.2808$) and in Table 16 the coefficient b_7 has a t-statistics of 1.07 ($p = \leq 0.2837$). Hence hypotheses H_{03} and H_{04} as stated in their null form cannot be rejected. This is again consistent with the theory that task difficulty rather than task uncertainty is the appropriate task characteristic to use in the model.

Table 15

Results of Regressing Job Related Tension on Budgetary Participation, Budget Emphasis, Task Uncertainty (Van de Ven & Delbecq, 1974) and All Interactions (H₀₃)

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	45.8985	0.9199	49.89	0.0000
Participation	b ₁	0.4146	0.1266	3.72	0.0013
Budget emphasis	b ₂	0.9181	0.5322	1.72	0.0861
Task uncertainty	b ₃	-0.0915	0.1057	-0.89	0.3743
Participation X budget emphasis	b ₄	-0.0250	0.0465	-0.53	0.5919
Participation X task uncertainty	b ₅	-0.0158	0.0142	-1.11	0.2668
Budget emphasis X task uncertainty	b ₆	0.0021	0.0552	0.03	0.9691
Participation X budget emphasis X task uncertainty	b ₇	-0.0079	0.0073	-1.08	0.2808

$R^2 = 0.094$ $F_{7, 189} = 2.7865$ $p \leq 0.0088$

Table 16

Results of Regressing Managerial Performance on Budgetary Participation, Budget Emphasis, Task Uncertainty (Van de Ven & Delbecq, 1974) and All Interactions (H₀₄)

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	5.8714	0.0522	0.00	0.0000
Participation	b ₁	-0.0258	0.0072	-3.58	0.0004
Budget emphasis	b ₂	-0.1166	0.0302	-3.85	0.0002
Task uncertainty	b ₃	0.0077	0.0058	1.31	0.1888
Participation X budget emphasis	b ₄	-0.0004	0.0026	-0.14	0.8877
Participation X task uncertainty	b ₅	0.0005	0.0008	0.57	0.5688
Budget emphasis X task uncertainty	b ₆	0.0003	0.0031	0.09	0.9267
Participation X budget emphasis X task uncertainty	b ₇	0.0004	0.0004	1.07	0.2837

$R^2 = 0.194$, $F_{7, 189} = 6.5186$, $p \leq 0.0001$

Testing of H₀₅ and H₀₆ : Task variability (Van de Ven & Delbecq, 1974)

The results for the three-way interaction between budget emphasis, budgetary participation and task variability (Van de Ven & Delbecq, 1974) affecting job related tension (H₀₅) are presented in Table 17. Table 18 shows the results for the three-way interaction affecting managerial performance (H₀₆).

Table 17

Results of Regressing Job Related Tension on Budgetary Participation, Budget Emphasis, Task Variability (Van de Van & Delbecq, 1974) and All Interactions (H₀₅)

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	45.8536	0.9293	49.34	0.0000
Participation	b ₁	0.3612	0.1273	2.83	0.0050
Budget emphasis	b ₂	0.9467	0.5427	1.74	0.0827
Task variability	b ₃	0.0049	0.1493	0.03	0.97
Participation X budget emphasis	b ₄	-0.0421	0.0529	-0.79	0.4272
Participation X task variability	b ₅	0.0127	0.0179	0.70	0.4803
Budget emphasis X task variability	b ₆	-0.0874	0.0796	-1.09	0.2736
Participation X budget emphasis X task variability	b ₇	-0.0001	0.0093	-0.00	0.9952

$$R^2 = 0.082 \quad F_{7, 189} = 2.4151 \quad p \leq 0.0217$$

Once again as expected, no significant three-way interaction existed in both cases. The coefficient b₇ in Table 17 failed to reach significance at any reasonable level ($t = -0.00$, $p \leq 0.9952$). The coefficient b₇ in Table 18 was also not statistically significant ($t = -1.22$, $p \leq 0.2216$). Hypotheses H₀₅ and H₀₆, as stated in their null forms cannot therefore be rejected.

Table 18

Results of Regressing Managerial Performance on Budgetary Participation, Budget Emphasis, Task Variability (Van de Ven & Delbecq, 1974) and All Interactions (H₀₆)

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	5.8686	0.0525	0.00	0.0000
Budgetary participation	b ₁	-0.0220	0.0072	-3.06	0.0025
Budget emphasis	b ₂	-0.1154	0.0307	-3.76	0.0002
Task variability	b ₃	0.0075	0.0084	0.89	0.3721
Participation X budget emphasis	b ₄	0.0025	0.0030	0.83	0.4069
Participation X task variability	b ₅	-0.0013	0.0010	-1.29	0.1967
Budget emphasis X task variability	b ₅	-0.0013	0.0010	-1.29	0.1967
Participation X budget emphasis X task variability	b ₇	-0.0006	0.0005	-1.22	0.2216

$R^2 = 0.193$ $F_{7, 189} = 6.4458$ $p \leq 0.0001$

Testing of H₀₇ and H₀₈ : Task difficulty (Van de Ven & Delbecq, 1974)

The results for the three-way interaction between budget emphasis, budgetary participation and task difficulty (Van de Ven & Delbecq, 1974) affecting job-related tension (H₀₇) are shown in Table 19. Table 20 shows the three-way interaction of the same independent variables affecting managerial performance (H₀₈).

Table 19

Results of Regressing Job-Related Tension on Budgetary Participation, Budget Emphasis, Task Difficulty (Van de Ven & Delbecq, 1974) and All Interactions (H₀₇)

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	46.0462	0.8953	51.43	0.0000
Participation	b ₁	0.4337	0.1223	3.54	0.0005
Budget emphasis	b ₂	0.7239	0.5163	1.40	0.1625
Task difficulty	b ₃	-0.3785	0.1850	-2.04	0.0422
Participation X budget emphasis	b ₄	-0.0637	0.0432	-1.47	0.1423
Participation X task difficulty	b ₅	-0.0748	0.0247	-3.02	0.0028
Budget emphasis X task difficulty	b ₆	0.1617	0.1054	1.53	0.1266
Participation X budget emphasis X task difficulty	b ₇	-0.0120	0.0108	-1.11	0.2672

$$R^2 = 0.151 \quad F_{7, 189} = 4.8175 \quad p \leq 0.0001$$

The coefficient b₇ in Table 19 is not statistically significant (t = -1.11 and p ≤ 0.2672) and hence hypothesis H₀₇ as stated in the null form cannot be rejected. This result is surprising as b₇ was expected to be significant. Since no other study using these same independent variables have been reported in the literature, further research in this area may be worthwhile.

As H₀₇ cannot be rejected, hypothesis H₀₉ relating to the effect of culture on the three-way interaction affecting job related tension was not tested.

Table 20

Results of Regressing Managerial Performance on Budgetary Participation, Budget Emphasis, Task Difficulty (Van de Van & Delbecq, 1974) and All Interactions (H₀₈)

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	5.8554	0.0506	0.00	0.0000
Participation	b ₁	-0.0261	0.0069	-3.78	0.0002
Budget emphasis	b ₂	-0.1040	0.0292	-3.56	0.0005
Task difficulty	b ₃	0.0176	0.0105	1.68	0.0937
Participation X budget emphasis	b ₄	0.0023	0.0024	0.94	0.3436
Participation X task difficulty	b ₅	0.0034	0.0014	2.43	0.0157
Budget emphasis X task difficulty	b ₆	-0.0109	0.0060	-1.83	0.0682
Participation X budget emphasis X task difficulty	b ₇	0.0016	0.0006	2.64	0.0088

$R^2 = 0.254$, adjusted $R^2 = 0.226$, $F_{7, 189} = 9.1907$ $p \leq 0.0001$

As expected, the results in Table 20 shows a statistically significant three-way interaction between budget emphasis, budgetary participation and task difficulty affecting managerial performance. The coefficient b₇ is statistically significant ($t = 2.64$, $p \leq 0.0088$). Tolerance was 2.6478. The explanatory power (R^2) of 0.254 was higher than the 0.200 of the additive regression model of the component parts without interaction and also higher than the two-way interactive model between budgetary participation and budget emphasis affecting managerial performance ($R^2 = 0.175$). Hypothesis H₀₈, as stated in the null form, that there is no

statistically significant three-way interaction between budget emphasis, budgetary participation, and task difficulty affecting managerial performance, was therefore rejected. These results are consistent with those of Brownell and Dunk's (1991) study and are consistent with the theory developed in this study that task difficulty, rather than task uncertainty or task variability is the more appropriate variable for task characteristic. The results lend support to Brownell and Dunk's (1991) study rather than Brownell and Hirst's (1986) study. The results also suggest that Brownell's (1982) findings that, compatible combinations of high (low) budget emphasis and high (low) budgetary participation are associated with improved managerial performance, cannot be generalised to all levels of task difficulty.

The results in Table 20 also show that the main effects of budgetary participation ($t = -3.78, p \leq 0.0002$) and budget emphasis ($t = -3.56, p \leq 0.0005$) and the interactive effects of budgetary participation and task difficulty ($t = 2.43, p \leq 0.0157$) were statistically significant. However, these lower level results do not have substantive meaning as they were artefacts of the correlation between the three-way interaction term and each of its components and the two-way interaction terms and they do not affect the sign, significance and therefore the interpretation of the three-way interaction term (Althauser, 1971; Cohen, 1978; Hirst & Lowy, 1990).

Consistencies in the results of this study therefore occur with task uncertainty and managerial performance in the case of Brownell and Hirst (1986) and task variability and task difficulty (Van de Ven & Delbecq, 1974) and managerial performance in the case of Brownell and Dunk (1991). Since about half of the pooled sample comprise subjects from a high power distance/low individualism culture (Singapore subsample), these consistencies of results lend support to Harrison's (1992) suggestion that research results on budgetary participation can be generalized between high power distance/low individualism nations and low power distance/high individualism nations.

In order to investigate if compatible combinations of high (low) budget emphasis and high (low) budgetary participation are associated with improved managerial performance in low task difficulty situations, task difficulty was dichotomised at its mean⁷. The following regression model (Equation 2) was used to test the two-way interaction between budget emphasis and budgetary participation in both low and high task difficulty situations (hypotheses H_{A8a} and H_{A8b}) :

$$Y_i = b_0 + b_1P_i + b_2B_i + b_3P_iB_i + e_i$$

(Equation 2)

where:

- Y_i = managerial performance
- P_i = budgetary participation
- B_i = budget emphasis
- e_i = error term

Since deviation scores based on the overall mean score for all respondents minus the raw scores of each respondent were used for all independent variables in the regression model, low raw scores for both budgetary participation and budget emphasis would have positive deviation scores and high raw scores for both budgetary participation and budget emphasis would have negative deviation scores. The product of the deviation scores of low budgetary participation and low budget emphasis would be the same as the product of the deviation scores of high budgetary participation and high budget emphasis. This therefore allows the direction of b_3 , the coefficient for the two-way interaction between budget emphasis and budgetary participation to be predicted. Since compatible combinations of high (low) budget emphasis and high (low) budgetary participation are expected to be associated with improved managerial performance only in low task difficulty situations, b_3 was expected to be positive in low task difficulty situations.

Mathematically the relation between budget emphasis (B_i) and managerial performance (Y_i) as influenced by budgetary participation (P_i) can be shown as follows:

$$\delta Y_i / \delta B_i = b_2 + b_3 P_i$$

$\delta Y_i / \delta B_i$ would be influenced by variations in P_i and is positive for high values of P_i and negative for low values of P_i . A significant and positive b_3 indicates interaction between budgetary participation (P_i) and budget emphasis (B_i) in the way they impact on managerial performance (Y_i). The results of the two-way regression between budgetary participation and budget emphasis are presented in Table 21 for low task difficulty and Table 22 for high task difficulty.

Table 21

Results of Regression of Managerial Performance on Budgetary Participation, Budget Emphasis and Their Interaction - Low Task Difficulty Subsample (H_{A8a})

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b_0	5.8956	0.0657	89.74	0.0000
Participation	b_1	-0.0141	0.0085	-1.64	0.1026
Budget emphasis	b_2	-0.1517	0.0370	-4.09	0.0001
Participation X Budget emphasis	b_3	0.0098	0.0037	2.62	0.0100

$R^2 = 0.213$ $F_{3,103} = 9.2278$ $p \leq 0.0001$

Table 22

Results of Regression of Managerial Performance on Budgetary Participation, Budget Emphasis and Their Interaction - High Task Difficulty Subsample (H_{A8b})

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	5.8058	0.0804	72.22	0.0000
Participation	b ₁	-0.0336	0.0112	-2.99	0.0036
Budget emphasis	b ₂	-0.0370	0.0483	-0.76	0.4453
Participation X budget emphasis	b ₃	-0.0049	0.0035	-1.41	0.1621

$$R^2 = 0.216 \quad F_{3, 86} = 7.8750 \quad p \leq 0.0001$$

As predicted, the interaction between budgetary participation and budget emphasis on managerial performance was found to be significant for low task difficulty subsample ($t = 2.62$, $p \leq 0.01$) as shown in Table 21 but not significant for high task difficulty subsample ($t = -1.41$, $p \leq 0.1621$) as shown in Table 22. The signs for the coefficients b₃ were also in the expected direction. The coefficient b₃ was positive for the low task difficulty subsample but not for the high task difficulty subsample. Thus the null hypothesis H₀₈ may be rejected in favour of the two alternative hypotheses H_{A8a} and H_{A8b}. The results obtained are consistent with those of Brownell and Dunk (1991).

To assist further in the interpretation of the results presented in Table 21 for the low task difficulty subsample and Table 22 for the high task difficulty subsample, both budgetary participation and budget emphasis were dichotomized at the mean. The results (based on raw scores) are shown in Table 23.

Table 23

Cell Frequencies, Mean and Standard Deviation for Managerial Performance Across Budgetary Participation and Budget Emphasis for Low and High Task Difficulty Subsamples

Task difficulty	Budget emphasis / participation combinations					
	High/high - low/low			High/low - low/high		
Low	n	=	71	n	=	36
	mean	=	6.0423	mean	=	5.8889
	s.d	=	0.7641	s.d.	=	0.5746
High	n	=	47	n	=	43
	mean	=	5.6170	mean	=	5.8837
	s.d	=	0.8736	s.d	=	0.7625

Note that for the low task difficulty subsample in Table 23, the mean performance score is higher in the cell where there is compatible combinations of low (high) budget emphasis and low (high) participation. The mean performance score of 6.0423, in the low budget emphasis/low participation and high budget emphasis/high participation cell, is higher than 5.8889 in the high budget emphasis/low participation and low budget emphasis/high participation cell. However, for the high task difficulty subsample, an inspection of the cells in Table 23 reveals that budgetary participation is important across all levels of budget emphasis. The mean performance score of compatible combinations of high budget emphasis/high participation and low budget emphasis/low participation of 5.6170 is lower than that in the

high budget emphasis/low participation and low budget emphasis/high participation cell of 5.8837. The argument for hypothesis H_{A8b} is that when task difficulty is high, participation is associated with improved performance regardless of whether it is matched with budget emphasis or not. The results confirm our expectations and are consistent with Brownell and Dunk's (1991) findings.

The results in Table 21 for the low task difficulty subsample shows participation as not significant. The t-statistics for the coefficient b_1 is -1.64, ($p \leq 0.1026$). Table 22 for high task difficulty shows participation as significant with t-statistics for coefficient b_1 as -2.99, ($p \leq 0.0036$). However, these lower-order coefficient estimates generated by the two-way regression model are not interpretable (Southwood, 1978). Therefore Table 21 for the low task difficulty subsample and Table 22 for the high task difficulty subsample were each refitted in a regression (based on raw scores) of participation and budget emphasis without their interactions terms. The regression model without the two-way interaction terms is given in Equation 3.

$$Y_i = b_0 + b_1P_i + b_2B_i + e_i$$

(Equation 3)

where:

Y_i	=	managerial performance
P_i	=	budgetary participation
B_i	=	budget emphasis
e_i	=	error term

Evidence that budgetary participation affects managerial performance across all levels of task difficulty would be consistent if b_1 , the coefficients for participation in both Table 24 and Table 25 are significantly different from zero.

Table 24

Results of Regression of Managerial Performance on Budgetary Participation and Budget Emphasis- Low Task Difficulty Subsample

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	4.0118	0.4492	8.93	0.0000
Participation	b ₁	0.0111	0.0087	1.27	0.2047
Budget emphasis	b ₂	0.1322	0.0373	3.54	0.0006

$$R^2 = 0.160 \quad F_{2, 104} = 7.8750 \quad p \leq 0.0001$$

Table 25

Results of Regression Managerial Performance on Budgetary Participation and Budget Emphasis - High Task Difficulty Subsample

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	3.7420	0.4846	7.72	0.0000
Participation	b ₁	0.0368	0.0111	3.32	0.0013
Budget emphasis	b ₂	0.0737	0.0409	1.80	0.0747

$$R^2 = 0.197 \quad F_{2, 87} = 10.6967 \quad p \leq 0.0001$$

The results in Table 24 indicate that when task difficulty is low, budgetary participation has a positive influence on managerial performance but is not significant ($t = 1.27$, $p \leq 0.2047$). By

contrast, the results in Table 25 indicate that when task difficulty is high, the effect of budgetary participation on managerial performance is both positive and significant ($t = 3.32, p \leq 0.0013$). These results confirm our expectations and support hypothesis H_{A8b} that participation is important in high task difficulty situations regardless of budget emphasis. Similar results were reported by Brownell and Dunk (1991).

Note that with the low task difficulty subsample, the explanatory power of the regression model with the interactive term ($R^2 = 0.213$) in Table 21 is much higher than the explanatory power of the regression model without the interactive term ($R^2 = 0.160$) in Table 24. However, in the case of the high task difficulty subsample, the explanatory power of the regression model with the interactive term ($R^2 = 0.216$) in Table 22 is only slightly higher than the explanatory power of the regression model without the interactive term ($R^2 = 0.197$) in Table 25. This supports hypothesis H_{A8a} that budget emphasis interacts with participation only in low task difficulty situations.

The results in Table 24 and Table 25 also suggest that budget emphasis is both positive and significant only in low task difficulty situations. The coefficient b_2 in Table 24 is both positive and significant ($t = 3.54, p \leq 0.0006$). This is consistent with Hirst's (1983) findings that high budget emphasis is associated with reduced job related tension and by inference, to higher managerial performance (Jamal, 1985) in low task uncertainty situations.

Testing of H₀₁₀ : Culture

Since there was a significant three-way interaction between budgetary participation, budget emphasis and task difficulty affecting managerial performance, an investigation of the effect of differences in the cultural dimensions of power distance and individualism was undertaken to determine the impact of culture on the three-way interaction. Respondents from Singapore-

located firms were selected as proxies for the high power distance/low individualism culture while respondents from the Western Australia-located firms were selected as proxies for the low power distance/high individualism culture (Harrison, 1992, 1993; Hofstede, 1983). The following regression model (Equation 4) was used to test the four-way interaction between budget emphasis, budgetary participation, task difficulty and culture affecting managerial performance (hypothesis H₀₁₀)

$$Y_i = b_0 + b_1P_i + b_2B_i + b_3T_i + b_4C_i + b_5P_iB_i + b_6P_iT_i + b_7P_iC_i + b_8B_iT_i + b_9B_iC_i + b_{10}T_iC_i + b_{11}P_iB_iT_i + b_{12}P_iT_iC_i + b_{13}P_iB_iC_i + b_{14}B_iT_iC_i + b_{15}P_iB_iT_iC_i + e_i$$

(Equation 4)

where:

Y_i	=	managerial performance
P_i	=	budgetary participation
B_i	=	budget emphasis
T_i	=	task difficulty
C_i	=	culture
e_i	=	error term

Respondents from the Singapore-located firms were each assigned a dummy variable with the value of 1 whilst the respondents from Western Australia-located firms were each assigned the value of 0. If culture affects the interaction between budgetary participation, budget emphasis and task difficulty on managerial performance, the coefficient b_{15} for the four-way interaction in Equation 4 would be significant. The results for the regression are reported in Table 26.

Table 26

Results of Regressing Managerial Performance on Budgetary Participation, Budget Emphasis, Task Difficulty and Culture and All Interactions (H₀₁₀)

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	5.8666	0.0778	75.42	0.0000
Participation	b ₁	-0.0161	0.0106	-1.52	0.1291
Budget emphasis	b ₂	-0.0883	0.0453	-1.95	0.0527
Task difficulty	b ₃	0.0244	0.0142	1.71	0.0884
Culture	b ₄	-0.0074	0.1040	-0.07	0.9432
Participation X budget emphasis	b ₅	-0.0021	0.0054	-0.39	0.6942
Participation X task difficulty	b ₆	0.0017	0.0019	0.88	0.3767
Participation X culture	b ₇	-0.0206	0.0147	-1.40	0.1632
Budget emphasis X task difficulty	b ₈	-0.0087	0.0083	-1.04	0.2952
Budget emphasis X culture	b ₉	-0.0123	0.0615	-0.19	0.8421
Task difficulty X culture	b ₁₀	-0.0173	0.0218	-0.79	0.4290
Participation X budget emphasis X task difficulty	b ₁₁	0.0018	0.0012	1.45	0.1482
Participation X task difficulty X culture	b ₁₂	0.0031	0.0031	0.99	0.3202
Participation X budget emphasis X culture	b ₁₃	0.0064	0.0063	1.02	0.3061

Table 26 (Continued)

Results of Regressing Managerial Performance on Budgetary Participation, Budget Emphasis, Task Difficulty, Culture and All Interactions

Variable	Coefficient	Estimate	Std Error	t	p
Budget emphasis X task difficulty X culture	b ₁₄	-0.0087	0.0132	-0.66	0.5085
Participation X budget emphasis X task difficulty X culture	b ₁₅	0.0004	0.0015	0.25	0.8005

$$R^2 = 0.271 \quad \text{adjusted } R^2 = 0.210 \quad F_{15, 181} = 4.4803 \quad p \leq 0.0001$$

As predicted, the coefficient b₁₅ in Table 26 for the four-way interaction between budget emphasis, budgetary participation, task difficulty and culture is not statistically significant ($t = 0.25$, $p \leq 0.8005$). The adjusted R^2 of 0.210 is 0.016 lower than the adjusted R^2 of the three-way interactive model without considering the effect of culture in Table 20 (adjusted $R^2 = 0.226$). These results suggest that the cultural difference of power distance and individualism between Singapore and Western Australia have no significant effect on the three-way interaction between budgetary participation, budget emphasis and task difficulty on managerial performance. Therefore hypothesis H₀₁₀ as stated in the null form cannot be rejected.

To confirm the results of the four-way interaction shown in Table 26 that culture has no significant interactive effect, task difficulty was dichotomized at its mean.

The following regression model (Equation 5) was used to test the three-way interaction between budgetary participation, budget emphasis and culture in both low and high task difficulty situations.

$$Y_i = b_0 + b_1P_i + b_2B_i + b_3C_i + b_4P_iB_i + b_5P_iC_i + b_6B_iC_i + b_7P_iB_iC_i + e_i$$

(Equation 5)

where:

Y_i	=	managerial performance
P_i	=	budgetary participation
B_i	=	budget emphasis
C_i	=	culture
e_i	=	error term

To test the three-way interaction, b_7 in Equation 5 was tested for statistical significance. The results (based on deviation scores) are shown in Table 27 for the low task difficulty subsample and Table 28 for the high task difficulty subsample. The coefficient b_7 in Table 27 was not statistically significant ($t = 0.16$, $p \leq 0.8665$) and coefficient b_7 in Table 28 was also not statistically significant ($t = 1.43$, $p \leq 0.1558$). These results suggest that there is no significant three-way interaction between budgetary participation, budget emphasis and culture for both the low and high task difficulty subsamples.

Table 27

Results of Regression of Managerial Performance on Budgetary Participation, Budget Emphasis, Culture and All Interactions - Low Task Difficulty Subsample

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	5.9144	0.1069	55.31	0.0000
Participation	b ₁	-0.0074	0.0129	-0.57	0.5685
Budget emphasis	b ₂	-0.1502	0.0655	-2.29	0.0240
Culture	b ₃	-0.0291	0.1385	-0.20	0.8342
Participation X budget emphasis	b ₄	0.0099	0.0073	1.35	0.1796
Participation X culture	b ₅	-0.0145	0.0183	-0.78	0.4319
Budget emphasis X culture	b ₆	0.0012	0.0805	0.01	0.9878
Participation X budget emphasis X culture	b ₇	0.0015	0.0088	0.16	0.8665

$R^2 = 0.218$ $F_{7,99} = 3.9464$ $p \leq 0.0008$

Table 28

Results of Regression of Managerial Performance on Budgetary Participation, Budget Emphasis, Culture and All Interactions -High Task Difficulty Subsample

Variable	Coefficient	Estimate	Std Error	t	p
Constant	b ₀	5.7874	0.1159	49.93	0.0000
Participation	b ₁	-0.0162	0.0159	-1.01	0.3112
Budget emphasis	b ₂	-0.0184	0.0624	-0.29	0.7690
Culture	b ₃	0.0375	0.1609	0.23	0.8162
Participation X budget emphasis	b ₄	-0.0153	0.0082	-1.87	0.0650
Participation X culture	b ₅	-0.355	0.0228	-1.55	0.1238
Budget emphasis X culture	b ₆	-0.0185	0.0997	-0.18	0.8529
Participation X budget emphasis X culture	b ₇	0.0133	0.0093	1.43	0.1558

$R^2 = 0.254$ $F_{7, 82} = 3.9464$ $p \leq 0.0009$

Chapter 6

Conclusions

Introduction

This study focussed on two major areas of research in management accounting, namely (i) the relation between superiors' evaluative styles and the dependent variables of job related tension and managerial performance and (ii) the generalization of research findings on budgetary participation between high power distance/low individualism nations and low power distance/high individualism nations.

Prior research results relating to the interactive effects between budget emphasis, budgetary participation and task characteristic on managerial performance and job related tension have been inconsistent (Brownell & Dunk, 1991; Brownell & Hirst, 1986). There are strong justifications to replicate both Brownell and Dunk (1991) and Brownell and Hirst (1986) because of the limitations and conflicting results of these studies. The limitations of Brownell and Hirst (1986) study include (i) a low R-square for the Mahoney et al. (1963, 1965) instrument for managerial performance, (ii) inappropriate sampling procedures and (iii) the inappropriate choice of task uncertainty as the variable for task characteristic. In addition, whilst Brownell and Hirst (1986) were unable to find any significant three-way interaction affecting managerial performance, they found a significant three-way interaction between the independent variable affecting job related tension. In an attempt to resolve the failure of Brownell and Hirst (1986) to support the hypothesis on managerial performance, Brownell and Dunk (1991) examined only the dependent variable of managerial performance but not job related tension. Using different task characteristic dimensions and different measurement instruments, both Brownell and Hirst (1986) and Brownell and Dunk (1991) were able to find significant results. Brownell and

have significant results for managerial performance. It was considered worthwhile to replicate both studies with the same variables and measurement instruments for task characteristics and to examine both dependent variables of job related tension and managerial performance to resolve the conflicting results of the two studies.

The second area of research in this study focussed on Harrison's (1992) suggestions that research results concerning budgetary participation can be generalized between the Anglo-American block of nations (with a low power distance/high individualism culture) and the Asian block of nations (with a high power distance/low individualism culture). It focussed on two major areas which have not been examined by Harrison's (1992) study. The first relates to the dependent variable of managerial performance and the second relates to the moderating effect of task difficulty.

Theoretical issues relating to the relationship among budget emphasis, budgetary participation and task characteristics were first examined. Hypotheses were then formulated and tested for the three-way interactive effects on the two dependent variables of job related tension and managerial performance. Theoretical issues relating to the generalization of research results on budgetary participation between cultures were also examined and hypotheses formulated and tested for the four-way interactive effects between budget emphasis, budgetary participation, task difficulty and culture on managerial performance.

The hypotheses were tested using data collected by questionnaire survey from different functional heads of manufacturing companies located in two nations, Singapore and Australia (with Western Australia as proxy for Australia). Singapore was selected as a surrogate for a high power distance/low individualism culture and Western Australia as a surrogate for a low power distance/high individualism culture.

Findings of the Study

The following were the major findings of this study:

- (i) There were no statistically significant three-way interactions between budget emphasis, budgetary participation and task characteristics affecting subordinates' job related tension. The task characteristics referred to above included task uncertainty (Withey et al., 1983), task uncertainty (Van de Ven & Delbecq, 1974) and task variability.
- (ii) There were no statistically significant three-way interactions between budget emphasis, budgetary participation and task characteristics affecting managerial performance. The task characteristics referred to above included task uncertainty (Withey et al., 1983), task uncertainty (Van de Ven & Delbecq, 1974) and task variability.
- (iii) There was no statistically significant three-way interaction between budget emphasis, budgetary participation and task difficulty affecting subordinates' job related tension.
- (iv) There was a statistically significant three-way interaction between budget emphasis, budgetary participation and task difficulty affecting managerial performance.
- (v) There was a statistically significant two-way interaction between budget emphasis and budgetary participation affecting managerial performance in low task difficulty situations.
- (vi) There was no statistically significant two-way interaction between budget emphasis and budgetary participation affecting managerial performance in high task difficulty situations.

- (vii) The power distance index value of Singapore was statistically significantly higher than that of Western Australia.
- (viii) The individualism index value of Singapore was lower than that of Western Australia and the difference between the two approached, but did not reach significance.
- (ix) There were no statistically significant four-way interactions between budget emphasis, budgetary participation, task difficulty and culture affecting managerial performance.
- (x) There were no statistically significant three-way interactions between budget emphasis, budgetary participation and culture affecting managerial performance in both low task difficulty situations and high task difficulty situations.

The absence of statistical significance in results (i) and (ii) was consistent with expectations. Consistent with Brownell and Dunk (1991), this study has argued that task difficulty is the most likely task characteristic variable to have a significant interaction with budget emphasis and budgetary participation. When task difficulty is high, that is, when the input/output relation of the task is difficult to specify or unclear, there is a greater need for budgetary participation to increase the incomplete task cause-effect knowledge. Task variability, on the other hand, refers to the variability of the subtasks which may be easily analysable in terms of input/output relations and hence may not require budgetary participation. Since task variability is a subdimension of task uncertainty, it follows that task uncertainty, whether measured by the Withey et al. (1983) instrument or the Van de Ven and Delbecq (1974) instrument would be an inappropriate variable for task characteristics.

Note that the absence of a significant three-way interaction between budget emphasis, budgetary participation and task uncertainty (Withey et al., 1983) affecting job related tension is

way interaction in their study. The conflicting results were not surprising as different sampling procedures have been used between the Brownell and Hirst (1986) study and the present study. Their study was based on a sample of line managers from a single large company whilst the sample for this study was selected from a large number of companies and comprised only functional heads.

The absence of a significant interaction between budget emphasis, budgetary participation and task difficulty affecting job related tension in finding number (iii) above was surprising as a significant interaction was expected. Evaluation of this result is difficult as there has been no other similar studies done previously. Brownell and Dunk (1991) have not examined the interactive effect of task difficulty on the dependent variable of job related tension. The relationship between budget emphasis and participation on job related tension is a complex one. Further studies in this area would be worthwhile.

The presence of a statistical significant three-way interaction between budget emphasis, budgetary participation and task difficulty affecting managerial performance in finding number (iv) is consistent with expectation. As discussed above, task difficulty was expected to interact with budget emphasis and budgetary participation to affect managerial performance. These results are consistent with those of Brownell and Dunk (1991) who also studied managerial performance.

The presence of a statistical significant interaction between budget emphasis and budgetary participation affecting managerial performance in low task difficulty situations in finding number (v) and the absence of a statistical significant interaction between the variables in high task difficulty situations in finding number (vi) provide additional evidence to support the findings of Brownell and Dunk (1991).

In summary, with regards to managerial performance, the results of this study are wholly consistent with those of Brownell and Hirst (1986) and Brownell and Dunk (1991). First of all, the results confirm Brownell and Hirst's (1986) findings that task uncertainty as measured by Withey et al.'s (1983) instrument has no significant interaction between budget emphasis and budgetary participation affecting managerial performance. Secondly, the results also confirm Brownell and Dunk's (1991) findings that task variability has no significant interaction between budget emphasis and budgetary participation affecting managerial performance. Thirdly, the results confirm Brownell and Dunk's (1991) findings that task difficulty interacts significantly with budget emphasis and budgetary participation to affect managerial performance. Furthermore, the results also support Brownell and Dunk's (1991) conclusion that Brownell's (1982) findings that compatible combination of high (low) budget emphasis and high (low) budgetary participation are associated with improved managerial performance can be generalized only to low task difficulty situations. In high task difficulty situations, high budgetary participation is associated with improved managerial performance regardless of budget emphasis.

Other important findings of this study are those related to the cultural subdimensions of power distance and individualism in findings number (vii) and (viii). The results confirm the power distance index value of Singapore (PDI = 60) to be significantly higher than that of Western Australia (PDI = 26). In contrast, the individualism index values of Singapore (IDV = 40) is lower than that of Western Australia (IDV = 60). These results are consistent with those of previous studies (Harrison, 1990, 1992, 1993; Hofstede, 1980). Although the absolute difference in the individualism index values between the two nations was not as wide as those reported in the previous studies, it was still moderately wide and in the predicted directions with Western Australia at a higher level than Singapore. A possible explanation for the smaller difference in individualism index value could be due to the fact that the Australian sample was restricted to Western Australia instead of the whole of Australia.

Given these differences in culture, this study was unable to find any significant interaction between culture, budget emphasis, budgetary participation and task difficulty affecting subordinates' job performance (in findings numbers (ix) and (x)). Three different tests were done. The first involved a test for a four-way interaction between budget emphasis, budgetary participation, task difficulty and culture affecting managerial performance. The other two involved tests for a three-way interaction between budget emphasis, budgetary participation and culture with a low task difficulty subsample, and then, with a high task difficulty subsample. All these tests confirmed the absence of any statistical significant interactive effects of culture.

Contributions of the Study

The use of a pooled sample with subjects from both the high power distance/low individualism culture (represented by Singapore) and low power distance/high individualism cultures (represented by Western Australia) and the absence of any significant interaction between budget emphasis, budgetary participation, task difficulty and culture on managerial performance in this study suggest that Harrison's (1992) conclusions may be valid. He has suggested that research findings on budgetary participation can be generalized between high power distance/low individualism nations and low power distance/high individualism nations. The results on this study can therefore be generalized to a substantial number of other nations. Besides Singapore, the high power distance/low individualism nations include other South-East Asian nations such as Malaysia, the Philippines, Hong Kong, Korea, Taiwan, Thailand and Indonesia. The low power distance/high individualism nations besides Australia include those nations in the Anglo-American block which consists of the USA, Great Britain, Canada and New Zealand.

Harrison (1992) further suggested that the research approach for the systematic evaluation of cultural effects can be extended to other areas of management accounting research. As the findings of this study are consistent with his theory and conclusions, they provide additional evidence to support the use of his research approach on culture in other aspects of the management accounting system. This has important practical implications. Further research along this line, not only on the budgetary areas, but also on all aspects of managerial accounting would enable Asian businesses to adopt Western managerial systems with greater confidence and, when and if appropriate, in a more discriminatory manner.

Furthermore, the confirmations of prior research results with a sample from different functional areas of manufacturing companies suggest that Brownell and Dunk's (1991) and Harrison's (1992) results can be generalized to all functional areas. The large number of companies involved in the study also provides a strong basis for generalizing the results to the whole population. The selection of the sample from manufacturing companies also provides a basis for generalizing Harrison's results (which were based on only department and retail sector) to the manufacturing industries.

Brownell and Dunk (1991, p. 703) have argued that the research work in the area of supervisory style "constitutes the only organized critical mass of empirical work in management accounting at present". From the work of Hopwood (1972) to this present study, researchers have sought to understand the relations between superiors' evaluative styles and subordinates' attitudes and performance. The results of this study are consistent with the theoretical developments of this area of research. The existence of significant interactions only in relation to the task difficulty variable and not in relation to the other task characteristic variables of task uncertainty and task variability suggest that the results of Brownell and Dunk (1991) may have a broader generalization than those of Brownell and Hirst (1986). This conclusion may have important implications for further research in this area.

The results of this line of research have enabled the following general conclusions to be made. First of all, there is no single best superiors' evaluative style. The appropriate superiors' evaluative style is dependent on circumstances (Briers & Hirst, 1990; Hopwood, 1972). However, the circumstances under which budgetary participation should be used are more easy to specify (Brownell, 1982; Brownell & Dunk, 1991). In situations of low task difficulty and low budget emphasis, participation should be encouraged. In situations of low task difficulty and high budget emphasis, participation should be discouraged. In situations of high task difficulty, participation should be encouraged regardless of whether budget emphasis is high or low. The selection of the appropriate mix of budget emphasis and participation under the appropriate task difficulty is likely to improve managerial performance. These conclusions are applicable to companies operating in those countries with a low power distance/high individualism culture and those with a high power distance/low individualism culture. An understanding of such findings may lead to changes in the superiors' budgetary and evaluative styles and bring about the desired subordinates' attitudes and job performance.

Limitations and Suggestions for Further Research

A number of limitations could have influenced the results of this study. First of all, although the study has extended Harrison's (1992) work to manufacturing companies, it has excluded non-manufacturing companies and public sector organizations. Hence the results of this study can only be generalized to manufacturing companies in the private sector.

Another limitation of this study relates to the measurement of task difficulty. The reliability coefficient computed for the Van de Ven and Delbecq (1974) instrument was relatively low. Some other studies using this scale have also reported only moderate alpha cronbach scores (e.g., Brownell & Dunk, 1991; Mia, 1987). This scale was retained in this study to ensure the

research with other existing instruments (or a new instrument) to evaluate task difficulty is needed to improve the reliability of task difficulty measurement and its impact on budgetary systems and managerial performance.

This study was also unable to find the statistical significance for the three-way interactive effect between budget emphasis, budgetary participation and task difficulty affecting job related tension. The result is perplexing. It is possible that the interactive effects on job related tension are different from those on managerial performance. Further research in this area is needed to confirm the findings of this study.

This study has also studied only two cultural blocks, the low power distance/high individualism block and the high power distance/low individualism cultural block. The other two cultural blocks of high power distance/high individualism and low power distance/low individualism have not been studied. The use of a pooled sample drawn simultaneously from cultural blocks, not studied in this study together with a test on the interaction between budget emphasis, participation, task difficulty and culture affecting managerial performance, may provide further evidence to evaluate Harrison's conclusions. Other dependent variables, such as job satisfaction, and other budget related attitudes could also be studied.

Like Hwang (1989) and Harrison (1990, 1992, 1993), this study has selected Singapore as a surrogate for a high power distance/low individualism culture and Australia as a surrogate for low power distance/high individualism culture. There is a need for similar comparative cultural studies to be conducted with other high power distance/low individualism nations and other low power distance/high individualism nations in order to improve the generalizability of the results.

This study has also relied solely on Hofstede's (1980) dimensions of culture and the

instruments was guided by the lack of alternative instruments for national culture. His power distance and individualism instruments represent the only available instrument for a systematic evaluation of national culture. The development of alternative measurement instrument for cultural dimensions would be a significant contribution to this area of research.

Finally, as with most studies of superiors' evaluative styles based on questionnaire survey, this study has the usual limitations associated with the questionnaire survey method (see Oppenheim, 1966). Longitudinal studies would help in the understanding of the processes of the interactions between culture and other independent variables on manager performance. In depth case studies may enable sensitive data to be collected and complex interactions to be observed.

Nevertheless, in spite of the limitations listed above, this study, together with those of others (e.g., Hwang, 1989, Harrison, 1990, 1992, 1993), constitute an attempt to develop a relatively different area of research. This line of research has provided some guidelines for a systematic evaluations of the effects of national culture, not only in management accounting, but also in other areas of accounting research.

Footnotes

1. For a comprehensive review of research work in this area, see Briers and Hirst (1990).
2. The staff functional heads (non-production and non-marketing/sales) were not randomly selected as most companies contacted were reluctant to supply the researchers with a complete list of their staff functional heads. Consequently, the questionnaires were mailed to the staff functional heads suggested by the companies and these were generally from administration, personnel or accounting.
3. The questionnaire included a seven-item measure for task difficulty. Of the seven items, there were two with polar reversals. The mean score of these two items (after reversal of scoring) was compared with the mean score of the other five items for each respondent to test for response set bias. Fourteen responses have a difference of 4 or more out of a maximum of 6. The coefficient of correlation (r) of the mean score of the two items with polar reversals and mean score of the other five items of these 14 responses was a very high negative 0.83. This justifies the exclusion of these 14 responses from the study. There were no significant differences between the regression results based on 112 responses (after the exclusion of the 14 responses) and those based on 126 responses (before the exclusion of the 14 responses).
4. The same procedure used to eliminate unreliable responses for the Singaporean subsample was adopted for the Australian subsample to ensure uniformity of approach. Six responses have a difference of 4 or more out of a maximum of 6 between the mean score of the two items with polar reversals and the mean score of the other five items included in the task difficulty scale. The coefficient of correlation (r) of the mean score of these two items and of the other five items of these six

- the present study. There were no significant differences between the regression results based on 93 responses (after the exclusion of the 6 responses) and those based on 96 responses (before the exclusion of the 6 responses).
5. A 5-point scale was used by Hofstede (1980) for the question "How frequently, in your work environment, are subordinates afraid to express disagreement with their superiors?" The scale included: "1 = very frequently", "2 = frequently", "3 = sometimes", "4 = seldom" and "5 = very seldom". In the present study, a 7-point scale was used for question 88 of the questionnaire. It included "1 = never", "2 = very seldom", "3 = seldom", "4 = sometimes", "5 = frequently", "6 = very frequently" and "7 = always". In calculating the mean score for this question, the 7-point scale was rescaled to 5 points to be consistent with the scale used by Hofstede (1980). This involved collapsing "never" and "very seldom" into one category and "always" and "very frequently" into another. The scores for this question were then reversed so that the scale was in the same direction as that Hofstede (1980).
 6. The six questions relating to the work goals were anchored on a 5-point scale by Hofstede (1980) as follows: "1 = of utmost importance", "2 = very important", "3 = of moderate importance", "4 = of little importance" and "5 = of very little or no importance". The present study used a 7-point response scale ranging between "1 = no importance", "2 = very little importance", "3 = little importance", "4 = moderate importance", "5 = important", "6 = very important" and "7 = utmost importance". In calculating the mean score for each of the six questions on work goals, the 7-point scale was rescaled to 5 points to be consistent with the scale used by Hofstede's (1980). The points "no importance" and "very little importance" were collapsed into a single category and the points "moderate important" and "important" collapsed into another category. The scores for these questions were then reversed so that the scale was in

If the point "important" is combined with "very important" instead of with "moderate important", the IDV score would be 48 for Singapore and 56 for Australia.

7. There were no significant differences between the results based on dichotomising task difficulty at the mean and those obtained when task difficulty was dichotomised at the median.

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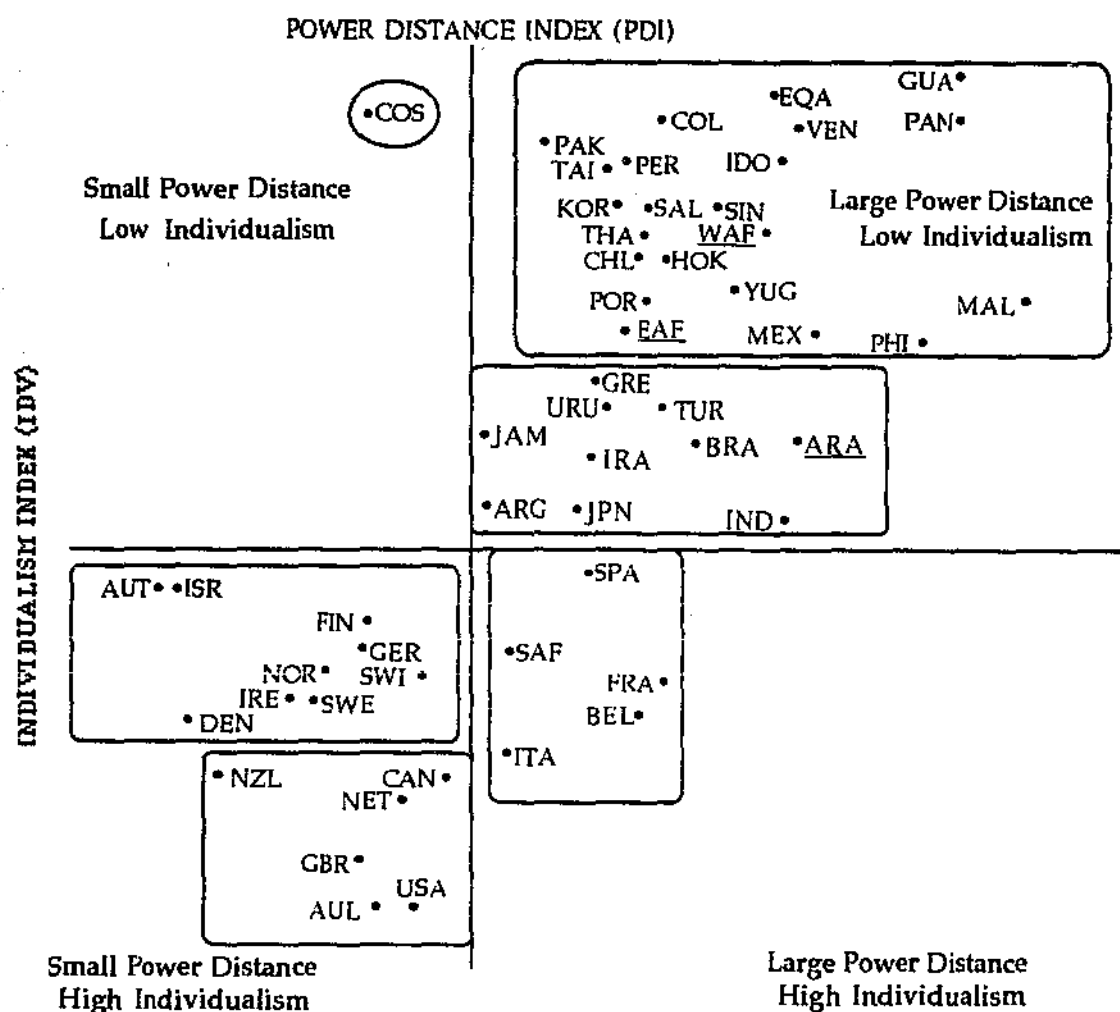
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Appendix A

This appendix contains:

- | | | |
|-------|--|-----|
| (i) | A power distance x individualism/collectivism
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A Power Distance x Individualism/Collectivism Plot for Fifty Countries and Three Regions



Country Abbreviations

ARA	Arab countries (Egypt, Lebanon, Libya, Kuwait, Iraq, Saudi-Arabia, U.A.E.	GER	Germany	PAN	Panama
ARG	Argentina	GRE	Greece	PER	Peru
AUL	Australia	GUA	Guatemala	PHI	Philippines
AUT	Austria	HOK	Hong Kong	POR	Portugal
BEL	Belgium	IDO	Indonesia	SAF	South Africa
BRA	Brazil	IND	India	SAL	Salvador
CAN	Canada	IRA	Iran	SIN	Singapore
CHL	Chile	IRE	Ireland	SPA	Spain
COL	Colombia	ISR	Israel	SWE	Sweden
COS	Costa Rica	ITA	Italy	SWI	Switzerland
DEN	Denmark	JAM	Jamaica	TAI	Taiwan
EAF	East Africa (Kenya, Ethiopia, Zambi)	JPN	Japan	THA	Thailand
EQA	Equador	KOR	South Korea	TUR	Turkey
FIN	Finland	MAL	Malaysia	URU	Uruguay
FRA	France	MEX	Mexico	USA	United States
GBR	Great Britain	NET	Netherlands	VEN	Venezuela
		NOR	Norway	WAF	West Africa (Nigeria, Ghana, Sierra Leone)
		NZL	New Zealand	YUG	Yugoslavia
		PAK	Pakistan		

Note. From The Cultural relativity of the quality of life concept by G. H. Hofstede, 1984,
Academy of Management Review, 9, p.391.

Power Distance Index (PDI) Values by Country

Country	PDI		Country	PDI	
	A	P		A	P
Philippines	94	73	South Africa	49	62
Mexico	81	70	Argentina	49	56
Venezuela	81	66	U.S.A.	40	42
India	77	78	Canada	39	36
Singapore	74	64	Netherlands	38	38
Brazil	69	72	Australia	36	44
Hong Kong	68	56	Germany (F.R.)	35	42
France	68	42	Great Britain	35	45
Colombia	67	75	Switzerland	34	32
Turkey	66	60	Finland	33	30
Belgium	65	36	Norway	31	27
Peru	64	69	Sweden	31	23
Thailand	64	74	Ireland	28	37
Chile	63	56	New Zealand	22	35
Portugal	63	53	Denmark	18	28
Greece	60	51	Israel	13	44
Iran	58	61	Austria	11	40
Taiwan	58	63			
Spain	57	56	Mean of 39 countries	51	52
Pakistan	55	74	(HERMES)		
Japan	54	57			
Italy	50	53	Yugoslavia (same industry)	76	53

A Actual

P Predicted

Actual values and values predicted on the basis of multiple regression on latitude, population size and wealth.

Note. From Culture's consequences: International differences in work-related values (p. 104)

by G. H. Hofstede, 1980, Beverly Hills, Calif: Sage Publications, Inc.

Country Individualism Index (IDV) Values

Country	IDV		Country	IDV	
	A	P		A	P
U.S.A.	91	95	Argentina	46	47
Australia	90	62	Iran	41	34
Great Britain	89	74	Brazil	38	37
Canada	80	80	Turkey	37	35
Netherlands	80	71	Greece	35	41
New Zealand	79	58	Philippines	32	23
Italy	76	62	Mexico	30	33
Belgium	75	71	Portugal	27	42
Denmark	74	75	Hong Kong	25	29
Sweden	71	85	Chile	23	38
France	71	80	Singapore	20	15
Ireland	70	52	Thailand	20	19
Norway	69	73	Taiwan	17	27
Switzerland	68	73	Peru	16	22
Germany (F.R.)	67	81	Pakistan	14	22
South Africa	65	38	Colombia	13	18
Finland	63	68	Venezuela	12	28
Austria	55	61			
Israel	54	47	Mean of 39 countries	51	52
Spain	51	51	(HERMES)		
India	48	34			
Japan	46	60	Yugoslavia (same industry)	76	53

A Actual

P Predicted

Work goal scores were computed for a stratified sample of seven occupations at two points in time.

Actual values and values predicted on the basis of multiple regression on wealth, latitude, and organization size.

Note. From Culture's consequences: International differences in work-related values (p. 222)

by G. H. Hofstede, 1980, Beverly Hills, Calif: Sage Publications, Inc.

Summary of Connotations of Power Distance Index Differences found in Survey Research

Low PDI Countries	High PDI Countries
Parents put less value on children obedience.	Parents put high value on children's obedience.
Students put high value on independence.	Students put high value on conformity.
Authoritarian attitudes in students are a matter of personality.	Students show authoritarian attitudes as a social norm.
Managers seen as making decisions after consulting with subordinates.	Managers seen as making decisions autocratically and paternalistically.
Close supervision negatively evaluated by subordinates.	Close supervision positively evaluated by subordinates.
Stronger perceived work ethic; strong disbelief that people dislike work.	Weaker perceived work ethic; more frequent belief that people dislike work.
Managers more satisfied with participative superior.	Managers more satisfied with directive or persuasive superior.
Subordinates' preference for manager's decision-making style clearly centred on consultative, give-and-take style.	Subordinates' preference for manager's decision-making style polarized between autocratic-paternalistic and majority rule.
Managers like seeing themselves as practical and systematic; they	Managers like seeing themselves as benevolent decisions makers.

Summary of Connotations of Power Distance Index Differences found in Survey Research
(Continued)

Low PDI Countries	High PDI Countries
Employees show more cooperativeness.	Employees fear to disagree with their boss.
Managers seen as showing more consideration.	Employees reluctant to trust each other.
Students have positive associations with "power" and "wealth".	Students have negative associations with "power" and "wealth".
Mixed feeling about employees' participation in management.	Ideological support for employee's participation management.
Mixed feelings among managers about the distribution of capacity for leadership initiative.	Ideological support among managers for a wide distribution of capacity for leadership and initiative.
Informal employee consultation possible without formal participation.	Formal employee participation possible without informal consultation.
Higher-educated employees hold much less authoritarian values than lower-educated ones.	Higher-and lower-educated employees show similar values about authority.

Note. From Culture's consequences: International differences in work-related values (p. 119)

by G. H. Hofstede, 1980, Beverly Hills, Calif: Sage Publications, Inc.

Appendix B

This appendix contains:

(i)	Copy of letter to Singaporean organisations	148
(ii)	Copy of letter to Western Australian organisations	149
(iii)	Copy of reminder letter to Western Australian organisations	150

Date

Name of Manager
Job Title
Company Name
Address
Singapore

Dear Sir/Madam

Re: Research Project

We are writing to seek your assistance and cooperation in a research project on the budgetary environment in Singapore.

Your company has been selected to assist in this study which is purely for research purposes. We wish to assure you that all the information provided will be treated with **strictest confidence** and only summarised results will be reported. A copy of the summarised results will be sent to you if you request for it.

We would be most grateful if you could complete this questionnaire. This should not take more than twenty minutes of your time. A self-addressed prepaid envelope is enclosed for your convenience.

If you have any queries with the questionnaire, kindly contact Sharon Low (Tel. 2531287, Singapore).

Thank you very much for your kind cooperation and assistance and hoping for an early response from you.

Yours sincerely

Chong M. Lau
Senior Lecturer
School of Accounting

Sharon Low
Research Scholar
School of Accounting

Date

Name of Manager
Job Title
Company Name
Address
Western Australia

Dear Sir/Madam

Re: Research Project (Western Australia)

We are writing to seek your assistance and cooperation in a research project on the budgetary environment in Western Australia. The research is intended to seek the views and opinions of the officer in charge of a particular function such as production, marketing, sales, administration, personnel, accounting and such other functions.

This research project is based entirely on Western Australia data. Such research is uncommon as many researchers do not regard the manufacturing base in Western Australia to be sufficiently wide to provide meaningful results. However, we believe that meaningful research in Western Australia is possible provided a sufficiently high response rate is obtained. We are therefore appealing to you to assist us so that the body of knowledge on Western Australia companies could be expanded. We would be most happy to share the summarised results of this project with you.

You are kindly requested to assist in this study which is purely for research purposes. We wish to assure you that all the information provided will be treated with strictest confidence and only summarised results will be reported. A copy of the summarised results will be sent to you if you request it.

We would be most grateful if you could complete this questionnaire. This should not take more than twenty minutes of your time. A self-addressed prepaid envelope is enclosed for your convenience.

If you have any queries with the questionnaire, kindly contact me at (09) 3326598 or (09) 3838730.

Thank you very much for your kind cooperation and assistance and hoping for an early response from you. Warmest regards and a very happy new year to you.

Your sincerely,

James Chong Lau
Senior Lecturer
School of Accounting

Date

Name of Manager
Job title
Name of Company
Address
Western Australia

Dear Sir,

Re: Research Project (Budgetary Environment in Western Australia).

We refer to our letter dated..... when we requested you to complete an enclosed questionnaire for a research project on the budgetary environment in Western Australia.

We trust you have already completed and returned the questionnaire which is probably in transit in the mail. We wish to thank you very much for your kind cooperation and assistance. A copy of the summarised results will be mailed to you as soon as we have received the responses from the other participants of this project.

As stated in our earlier letter, this research project is based entirely on Western Australian data. As the manufacturing base in Western Australia is not as wide as those in the eastern states, a high response rate from the participants of this project is critical for the research results to be meaningful. Your response is therefore vital to the success of this project to increase the body of knowledge on Western Australian companies.

If you have been unable to complete the questionnaire yet, we would be most grateful if you could assist us as soon as possible. This should not take more than twenty minutes of your time. We wish to assure you once again that all the information provided will be treated with **strictest confidence** and only summarised results will be reported. A copy of the summarised results will be sent to you if you request it.

If you have any queries with the questionnaire or if you need a replacement copy, kindly contact the undersigned at (09) 3326398 or (09) 3838730.

Thank you very much for your kind cooperation and assistance. Warmest regards and a very happy new year to you.

Yours sincerely

James Chong Lau
Senior Lecturer
School of Accounting

Appendix C

Questionnaire

Please do not spend too much time on the following items. There are no right or wrong answers and therefore your first response is important. Mark T for true and F for false. Be sure to answer every question.

1. A problem has little attraction for me if I don't think it has a solution. ()
2. I am just a little uncomfortable with people unless I feel that I can understand their behaviour. ()
3. There's a right and a wrong way to do almost everything. ()
4. I would rather bet 1 to 6 on a long shot than 3 to 1 on a probable winner. ()
5. The way to understand complex problems is to be concerned with their larger aspects instead of breaking them into smaller pieces. ()
6. I get pretty anxious when I'm in a social situation over which I have no control ()
7. Practically every problem has a solution. ()
8. It bothers me when I am unable to follow another person's train of thoughts. ()
9. I have always felt that there is a clear difference between right and wrong. ()
10. It bothers me when I don't know how other people react to me. ()
11. Nothing gets accomplished in this world unless you stick to some

12. If I were a doctor, I would prefer the uncertainties of a psychiatrist to the clear and definite work of someone like a surgeon or x-ray specialists. ()
13. Vague and impressionistic pictures really have little appeal for me. ()
14. If I were a scientist, it would bother me that my work would never be completed (because science will always make new discoveries) ()
15. Before an examination, I feel much less anxious if I know how many questions there will be. ()
16. The best part of working a jigsaw puzzle is putting in that last piece. ()
17. Sometimes I rather enjoy going against the rules and doing things I'm not supposed to do ()
18. I don't like to work on a problem unless there is a possibility of coming out with a clear-cut and unambiguous answer. ()
19. I like to fool around with new ideas, even if they turn out later to be a total waste of time. ()
20. Perfect balance is the essence of all good composition. ()

When your superiors is evaluating your performance, how much importance do you think he or she attaches to the following items? Please respond by circling a number from 1 to 7, based on the following scale, for each of the items listed below.

- | | |
|---------------------------|----------------------|
| 1. Never important | 5. Often important |
| 2. Seldom important | 6. Usually important |
| 3. Occasionally important | 7. Always important |
| 4. Sometimes important | |

		Never important					Always important	
		1	2	3	4	5	6	7
21.	How well I cooperate with my colleague.	1	2	3	4	5	6	7
22.	My concern with costs.	1	2	3	4	5	6	7
23.	How well I get along with him or her	1	2	3	4	5	6	7
24.	How much effort I put into the job.	1	2	3	4	5	6	7
25.	My concern with quality.	1	2	3	4	5	6	7
26.	Meeting the budget.	1	2	3	4	5	6	7
27.	My attitude toward my work.	1	2	3	4	5	6	7
28.	My ability to handle my work force.	1	2	3	4	5	6	7
29.	My attitude toward my company.	1	2	3	4	5	6	7
30.	How well I cooperate with individuals outside the firm (e.g. suppliers, customers).	1	2	3	4	5	6	7

The following items can be used to describe the role you play in the development of the budget for your area of responsibility. Please respond by circling a number from 1 to 7 on the scale for each of the items.

31. What is the extent of your involvement in the setting of your area of responsibility's budget? I am involved in setting :

None of the
budget

All of the
budget

1 2 3 4 5 6 7

32. What is the extent of the reasoning given by your superior for revisions to your budget?

No
reasoning

Extensive
reasoning

1 2 3 4 5 6 7

33. How frequently do you give your opinions to your superior about the budget?

Never

Very
frequently

1 2 3 4 5 6 7

34. What is the extent of your influence on the final budget for your area responsibility?

No
influence

Extensive
influence

1 2 3 4 5 6 7

35. What is the degree of importance of your contribution to the budget?

No
importance

Extensive
importance

1 2 3 4 5 6 7

36. How frequently are you asked for your opinions when the budget is being set by your superior?

Never

Very
frequently

1 2 3 4 5 6 7

How would you rate your performance on the following items? Please respond by circling a number from 1 to 7, based on the following scale, for each of the items.

- | | |
|------------------|------------------|
| 1. Very low | 5. Above average |
| 2. Low | 6. High |
| 3. Below average | 7. Very high |
| 4. Average | |

		Very low						Very high
37.	Planning for my area of responsibility	1	2	3	4	5	6	7
38.	Coordinating my area's activities	1	2	3	4	5	6	7
39.	Evaluating subordinates' activities	1	2	3	4	5	6	7
40.	Investigating issues in my area	1	2	3	4	5	6	7
41.	Supervising staff	1	2	3	4	5	6	7
42.	Obtaining and maintaining suitable staff	1	2	3	4	5	6	7
43.	Negotiating	1	2	3	4	5	6	7
44.	Representing the interests of my area	1	2	3	4	5	6	7
45.	Overall performance	1	2	3	4	5	6	7

YOU HAVE COMPLETED NEARLY HALF OF THIS QUESTIONNAIRE.

I REALLY APPRECIATE YOUR TIME IN HELPING ME.

Please indicate the extent of your agreement with each of the following statements by circling a number from 1 to 7, based on the following scale:

- | | |
|------------------------|---------------------|
| 1. Strongly disagree | 5. Mildly agree |
| 2. Moderately disagree | 6. Moderately agree |
| 3. Mildly disagree | 7. Strongly agree |
| 4. Neutral | |

- | | Strongly
disagree | | | | | | | Strongly
agree |
|---|----------------------|---|---|---|---|---|---|-------------------|
| 46. There is a clearly defined body of knowledge or subject which can guide me in doing my work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 47. There is an understandable sequence of steps that can be followed in doing my work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 48. During the course of my work, I often come across specific difficult problems that I don't know how to solve immediately. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 49. In general, I usually spend a considerable amount of time trying to solve such specific problems. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 50. If there is something that I don't know how to handle in my work, I can go to someone else for an answer to the problem. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |

		Strongly disagree					Strongly agree	
		1	2	3	4	5	6	7
51.	In some jobs I can be sure of what the outcome will be, while in other jobs I am often not sure what the outcome will be. I am generally sure what the results of my efforts are.	1	2	3	4	5	6	7
52.	It does not take long before I know whether my effort is successful.	1	2	3	4	5	6	7
53.	There is considerable variety in my activities in a working day.	1	2	3	4	5	6	7
54.	Regardless of the variety in my activities, I can employ the same approaches or methods in dealing with specific categories of activities.	1	2	3	4	5	6	7
55.	My work is routine.	1	2	3	4	5	6	7
56.	People in my area of responsibility do about the same job in the same way most of the time.	1	2	3	4	5	6	7
57.	Basically, members of my area of responsibility perform repetitive activities in doing their jobs.	1	2	3	4	5	6	7
58.	In doing their jobs from day to day, members of my area of responsibility generally have to adopt different methods or procedures to do their work.	1	2	3	4	5	6	7
59.	There are different types or kinds of work to do everyday in this job.	1	2	3	4	5	6	7
60.	My tasks are the same from day-to-day.	1	2	3	4	5	6	7

		Strongly disagree					Strongly agree	
61.	My duties are repetitious.	1	2	3	4	5	6	7
62.	There is a clearly known way to do the major types of work that I normally encounter	1	2	3	4	5	6	7
63.	I can actually rely on established procedures and practices to do my work.	1	2	3	4	5	6	7
64.	Company rules should not be broken - even when the employees thinks it is in the company's best interest.	1	2	3	4	5	6	7

	Very rarely						Nearly all the time
72. The fact that you can't get information needed to carry out your job.	1	2	3	4	5	6	7
73. Having to decide things that affect the lives of individuals, people that you know.	1	2	3	4	5	6	7
74. Feeling that you may not be liked and accepted by the people you work with.	1	2	3	4	5	6	7
75. Feeling unable to influence your immediate superior's decisions and actions that affect you.	1	2	3	4	5	6	7
76. Not knowing just what the people you work with expect of you.	1	2	3	4	5	6	7
77. Thinking that the amount of work you have to do may interfere with how well it gets done.	1	2	3	4	5	6	7
78. Feeling that you have to do things on the job that are against your better judgement.	1	2	3	4	5	6	7
79. Feeling that your job tends to interfere with your family life.	1	2	3	4	5	6	7

YOU ARE ALMOST FINISHED ! THERE ARE ONLY A FEW MORE QUESTIONS TO GO.

THANK YOU VERY MUCH FOR YOUR KIND COOPERATION

Please think of an ideal job - disregarding your present job. In choosing an ideal job, how important would each of the factors listed below be to you. Please respond by circling a number from 1 to 7, based on the following scales:

- | | |
|---------------------------|---------------------|
| 1. No importance | 5. Important |
| 2. Very little importance | 6. Very important |
| 3. Little importance | 7. Utmost important |
| 4. Moderate importance | |

	No importance				Utmost importance		
80. Have a job which leaves you sufficient time for your personal or family life.	1	2	3	4	5	6	7
81. Have challenging work to do - work from which you can get a personal sense of accomplishment.	1	2	3	4	5	6	7
82. Have good physical working conditions (good ventilation and lighting, adequate work space, etc.).	1	2	3	4	5	6	7
83. Have considerable freedom to adopt your own approach to the job.	1	2	3	4	5	6	7
84. Have training opportunities (to improve your skills or learn new skills).	1	2	3	4	5	6	7
85. Fully use your skills and abilities on the job.	1	2	3	4	5	6	7

The descriptions below apply to four different types of managers. First, please read through these descriptions:

- | | |
|------------------|--|
| Manager 1 | Usually makes decisions promptly and communicates them to subordinates clearly and firmly. Expects them to carry out the decisions loyally and without raising difficulties. |
| Manager 2 | Usually makes decisions promptly, but, before going ahead, tries to explain them fully to subordinates. Gives them the reasons for the decisions and answers whatever questions they may have. |
| Manager 3 | Usually consults with subordinates before reaching decisions. Listens to their advice, considers it, and then announces decisions. Expects all to work loyally to implement it whether or not it is in accordance with the advice they gave. |
| Manager 4 | Usually calls a meeting of subordinates when there is an important decision to be made. Puts the problem before the group and invites discussion. Accepts the majority viewpoint as the decision. |

Please respond by circling the appropriate number.

86. Now, for the above types of manager, which one would you prefer to work under.

- | | |
|------------------|------------------|
| 1. Manager 1 | 3. Manager 3 |
| 2. Manager 2 | 4. Manager 4 |

87. And, to which of the above four types of managers would you say your own superior most closely corresponds?

- | | |
|---|--------------|
| 1. Manager 1 | 3. Manager 3 |
| 2. Manager 2 | 4. Manager 4 |
| 5. Does not correspond closely to any of them | |

88. How frequently, in your work environment, are subordinates afraid to express disagreement with their superiors?

- | | |
|----------------|--------------------|
| 1. Never | 5. Frequently |
| 2. Very seldom | 6. Very frequently |
| 3. Seldom | 7. Always |
| 4. Sometimes | |

Please respond by circling the appropriate number

89. How often do you feel nervous or tense at work?

- | | |
|--------------------------|---------------------------|
| 1. I never feel this way | 5. Often |
| 2. Seldom | 6. Usually |
| 3. Occasionally | 7. I always feel this way |
| 4. Sometimes | |

90. How long do you think you will continue working for this company?

1. Two years at the most
2. From two to five years
3. More than five years (but I probably will leave before I retire)
4. Until I retire

Please answer the following questions

91. Name of company (Optional) _____
92. Size of organization (in terms of number of employees) _____ approximately
93. Department / division which you work _____
94. Present job title or position _____
95. How long have you worked in this organization? _____ years
96. How long have you been in this current position? _____ years
97. How many years of experience do you have in your current areas of responsibility? _____ years
98. How many employees are there in your areas of responsibility? _____ approximately
99. How long have you lived in this country? _____ years
100. What is your year of birth? 19_____

102. In what country were you born? _____

103. What is your highest qualifications? (Please circle the appropriate number).

- | | |
|-------------------------------------|--------------------------------|
| 1. 'O' / 'A' level | 4. Professional Qualifications |
| 2. Vocational / Diploma Certificate | 5. Others |
| 3. University Degree | (Specify)_____ |

THANK YOU VERY MUCH FOR YOUR TIME !

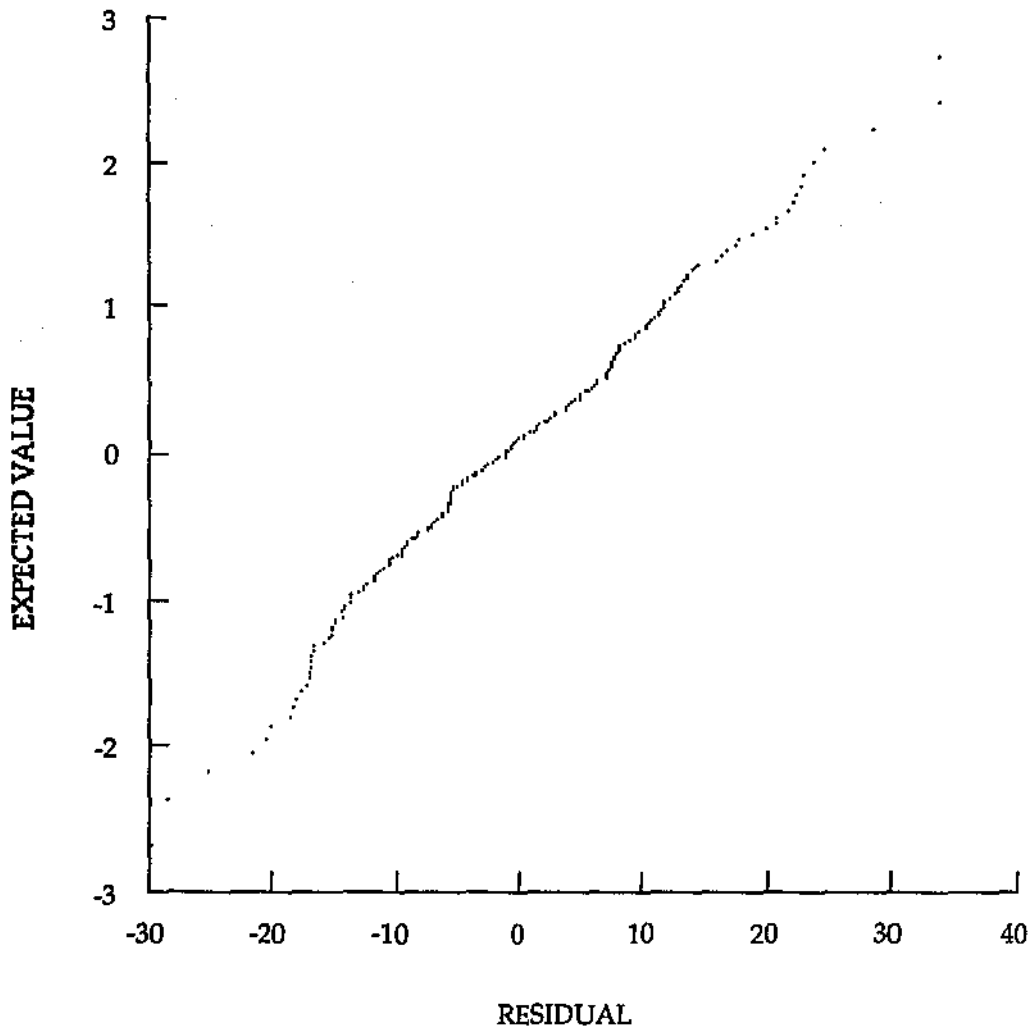
Appendix D

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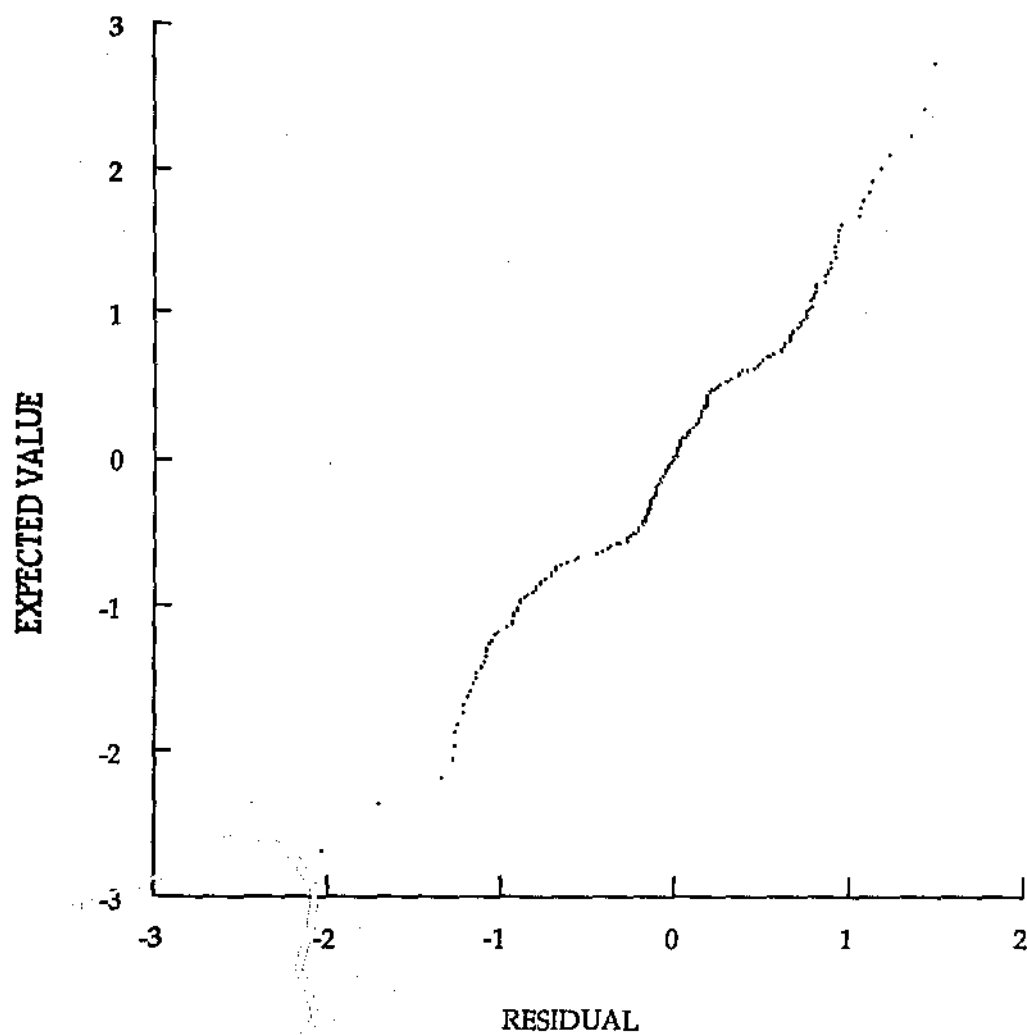
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| (2) | Normal probability plot for the three-way interaction between budget emphasis, budgetary participation and task uncertainty (Withey et al., 1983) on managerial performance | 170 |
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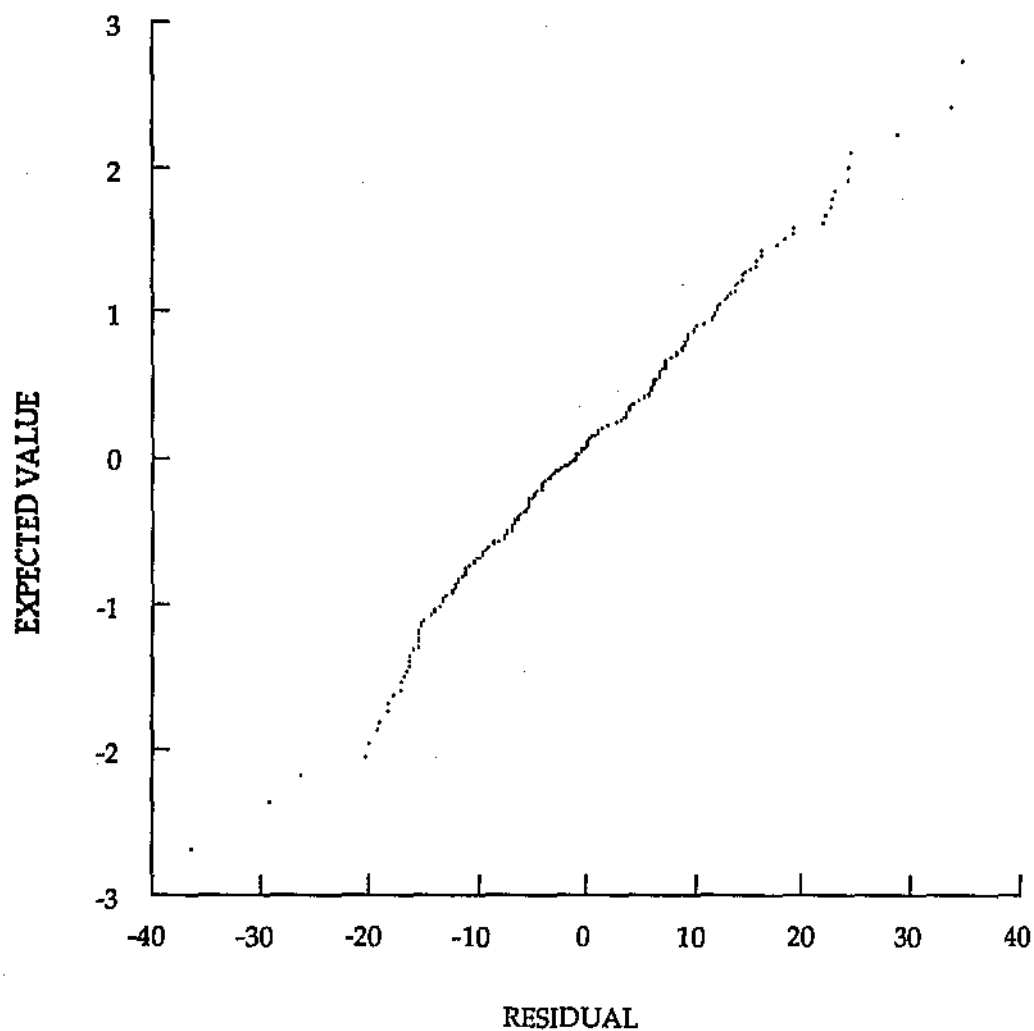
Normal Probability Plot for the Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Task Uncertainty (Withey et al., 1983) on Job Related Tension



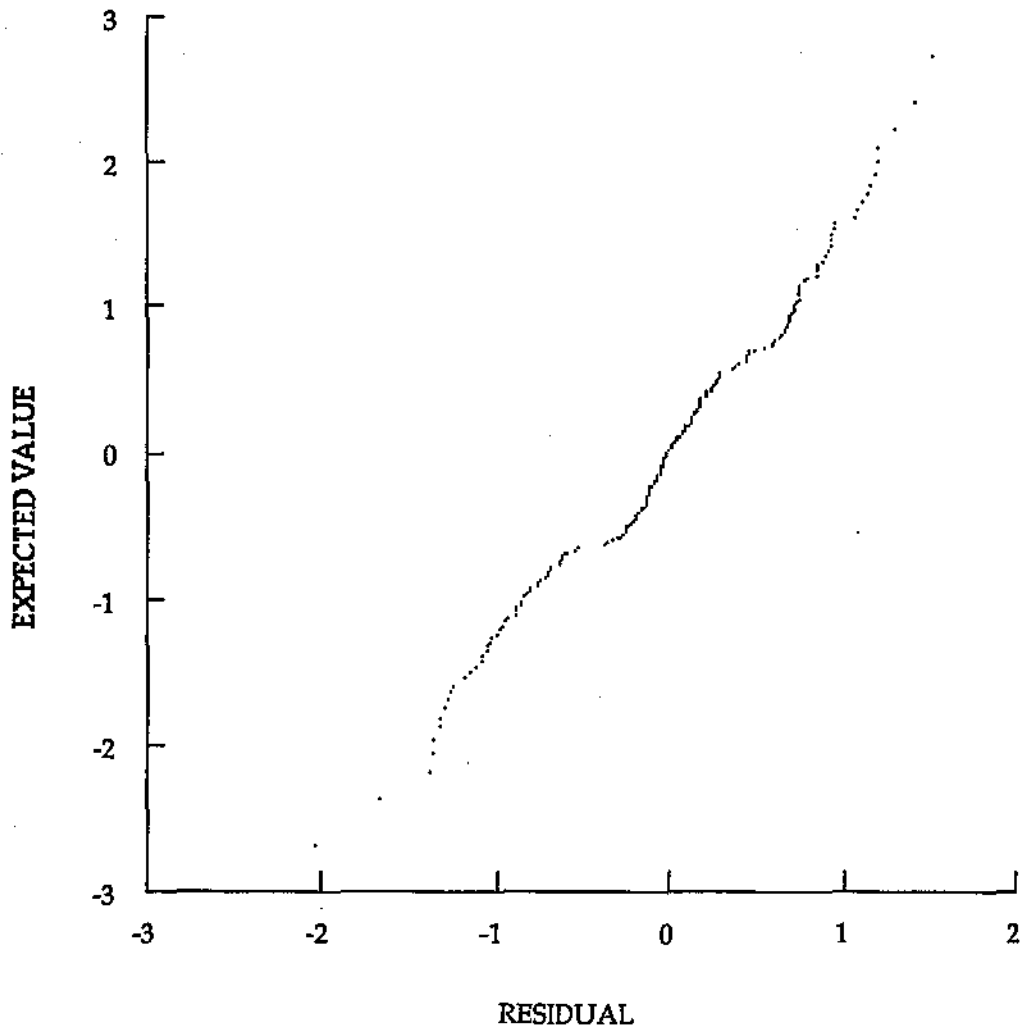
Normal Probability Plot for the Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Task Uncertainty (Withey et al., 1983) on Managerial Performance



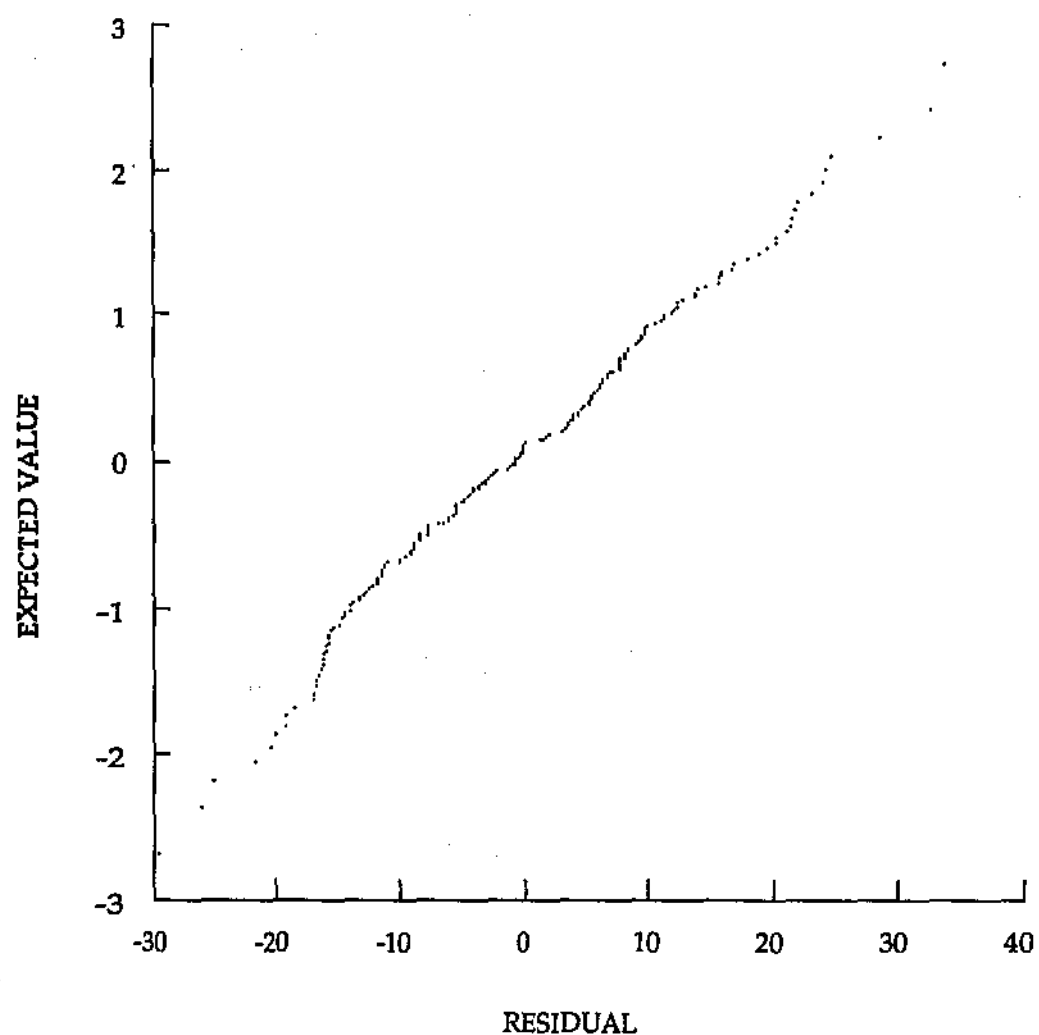
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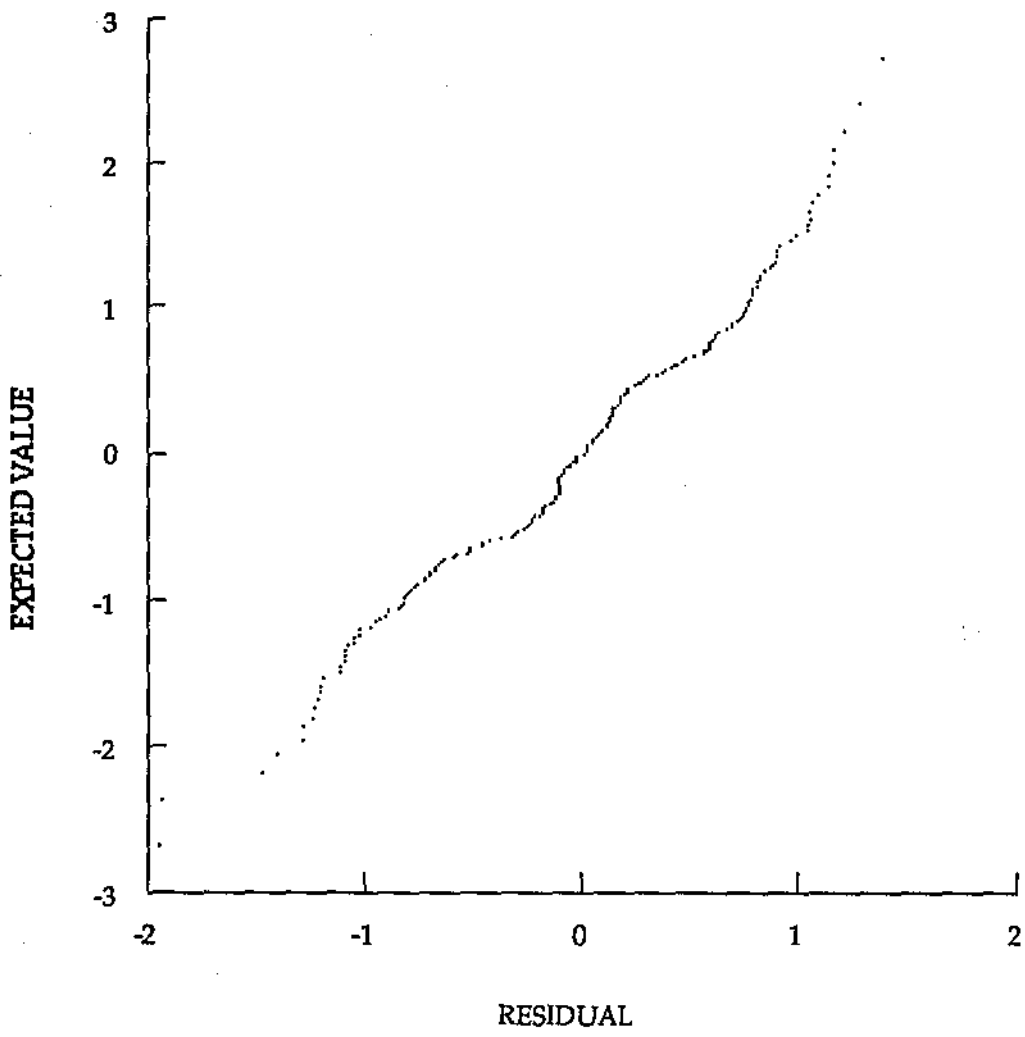
Normal Probability Plot for the Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Task Uncertainty (Van De Ven & Delbecq, 1974) on Managerial Performance



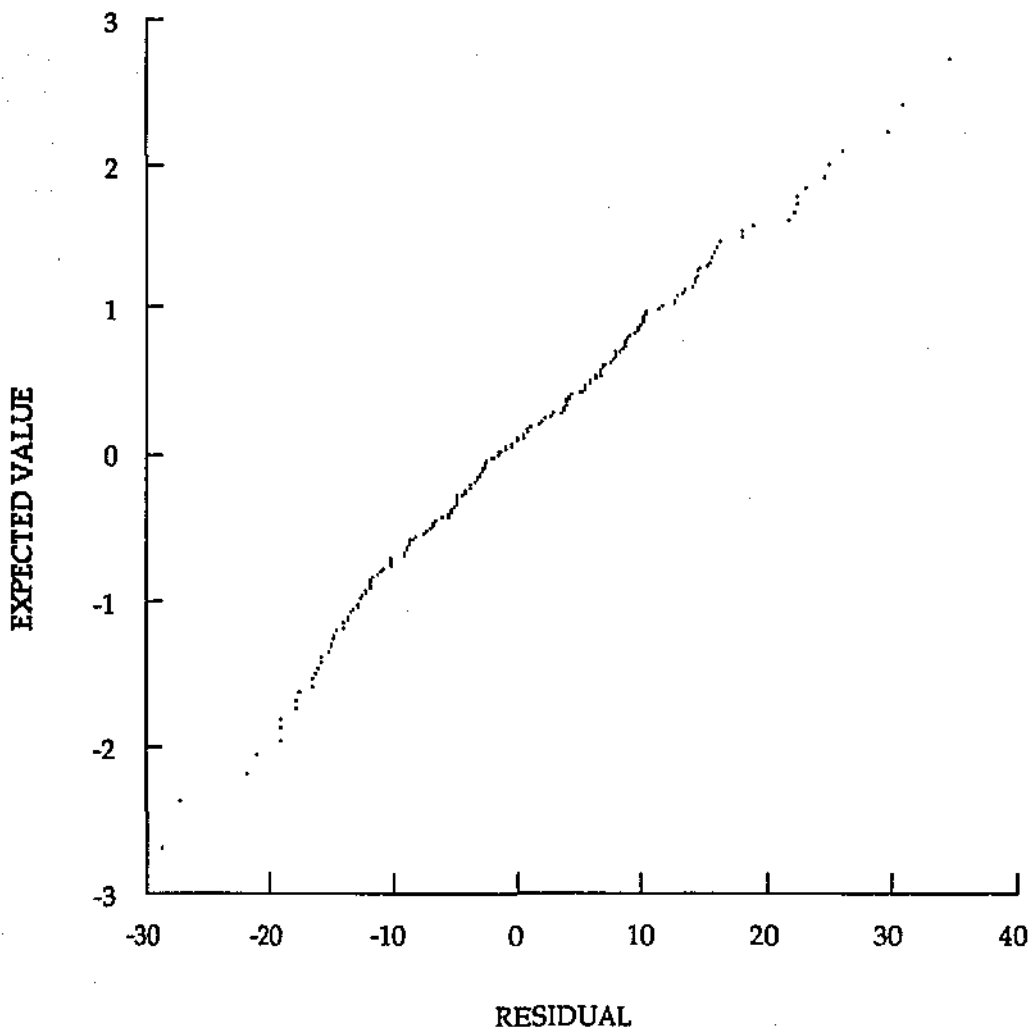
Normal Probability Plot for the Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Task Variability (Van De Ven & Delbecq, 1974) on Job Related Tension



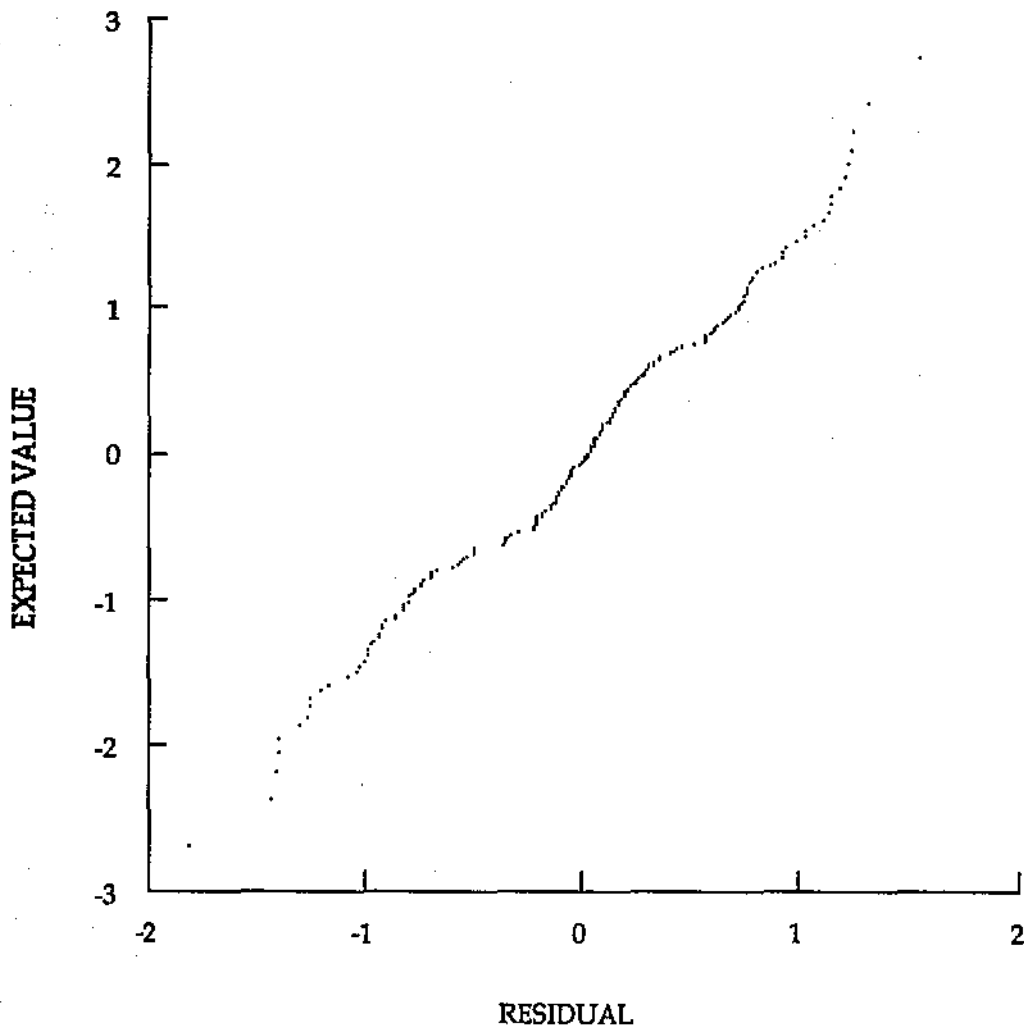
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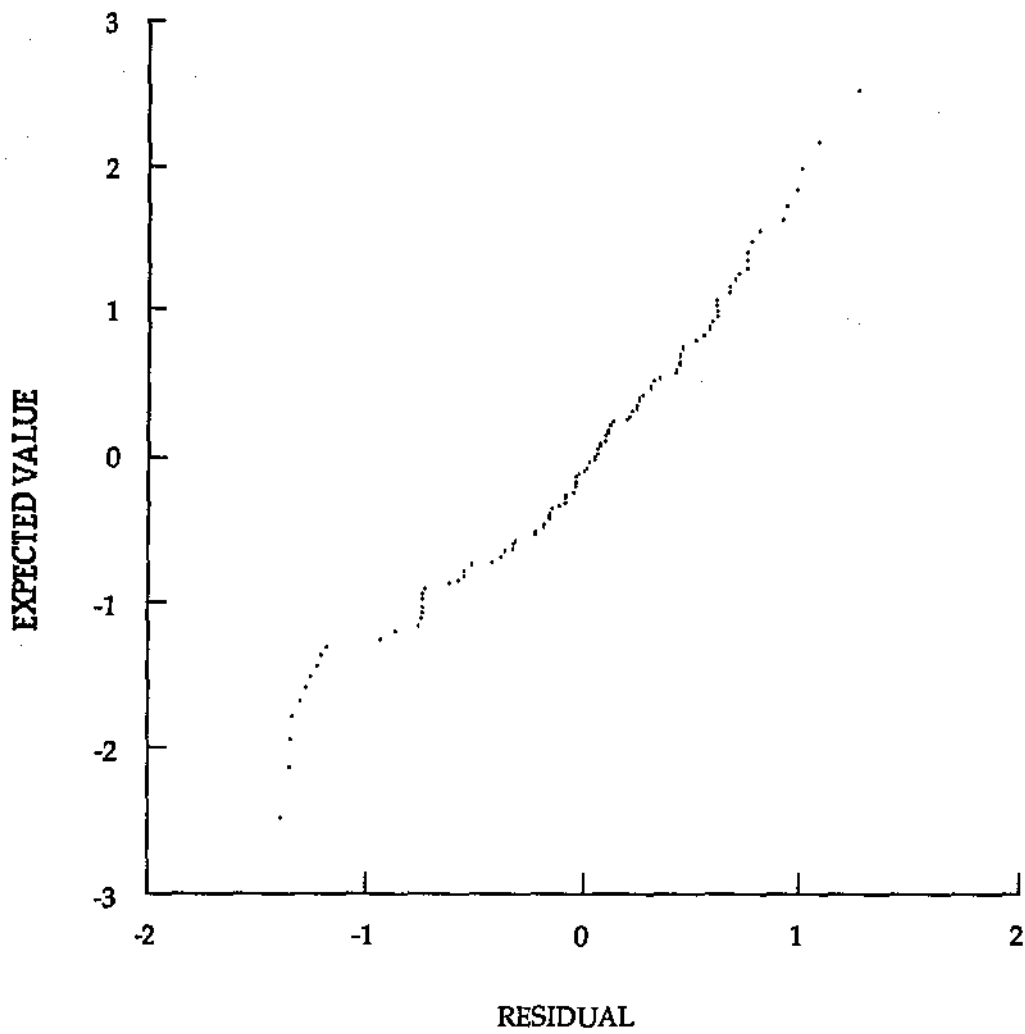
Normal Probability Plot for the Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Task Difficulty on Job Related Tension



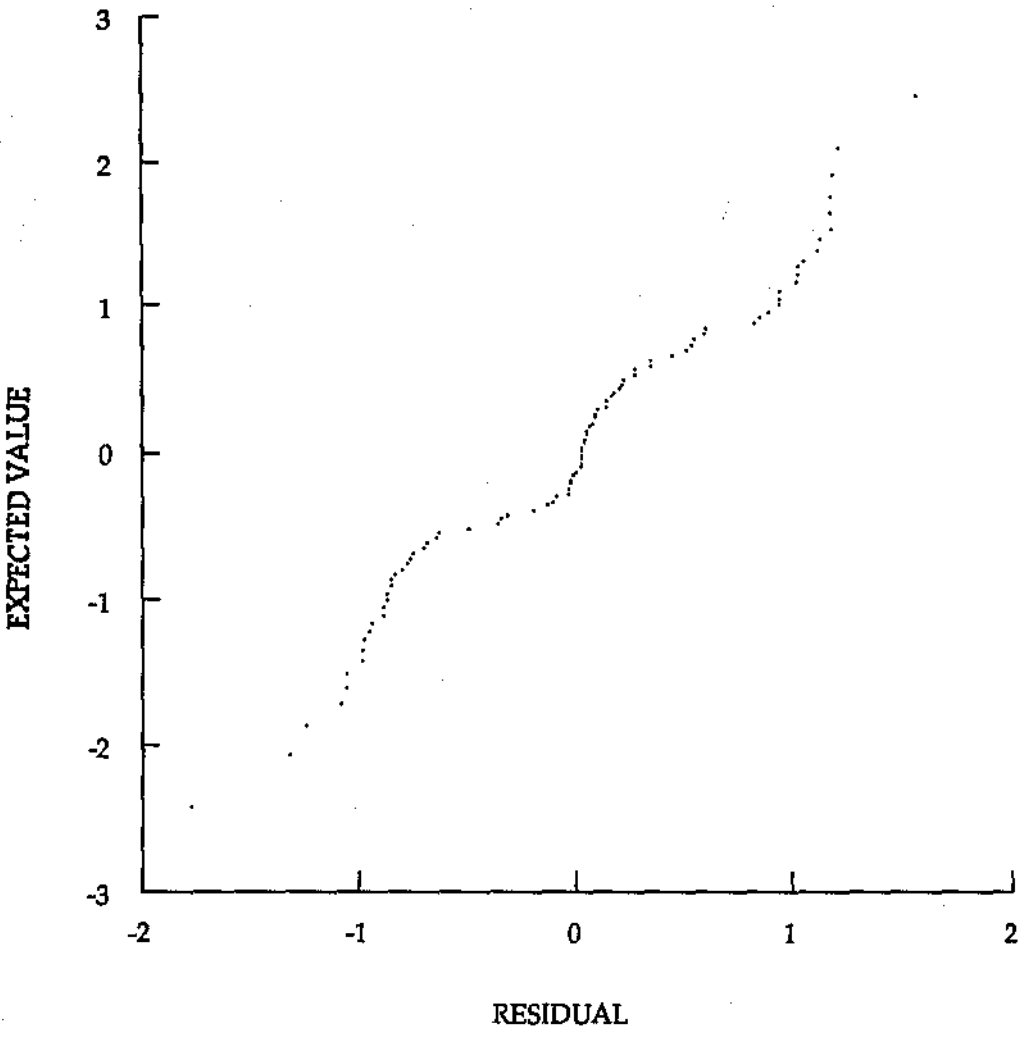
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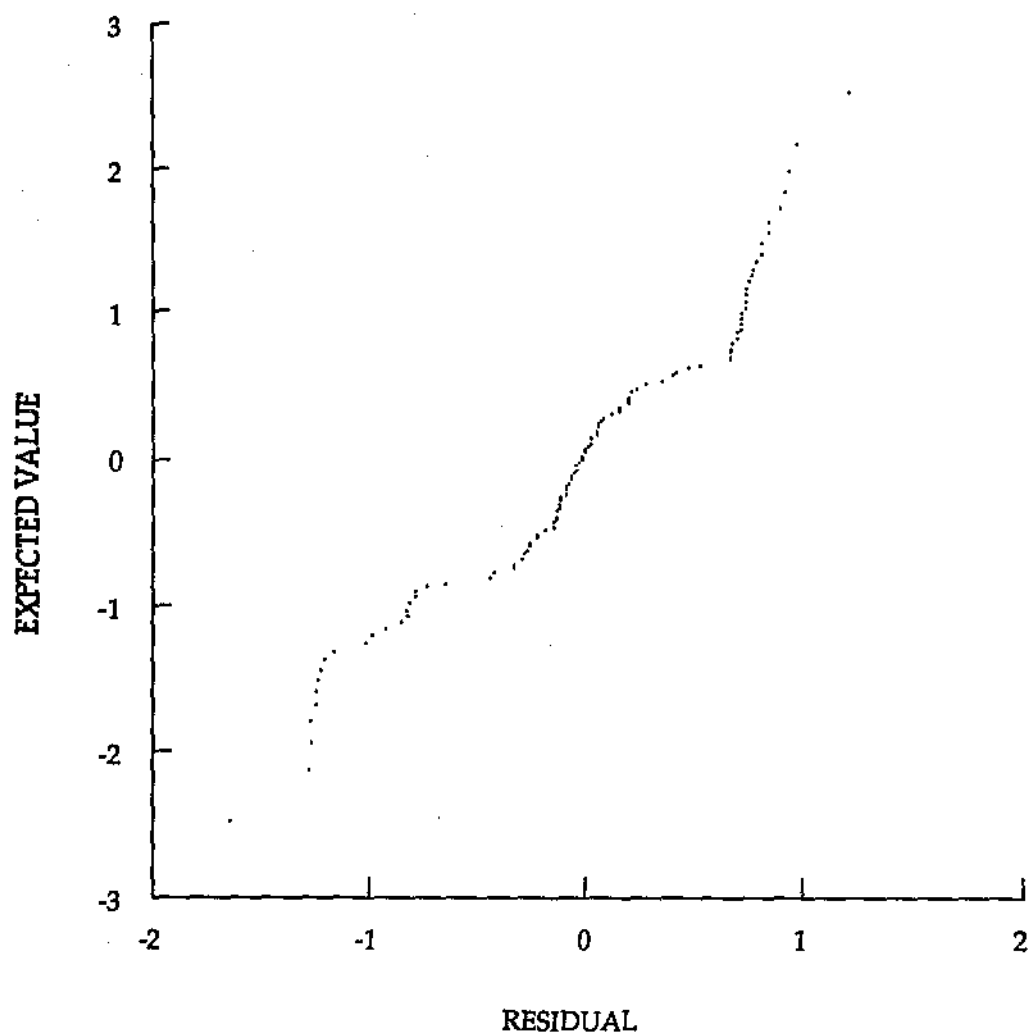
Normal Probability Plot for the Two-Way Interaction Between Budget Emphasis, Budgetary Participation for Low Task Difficulty Subsample on Managerial Performance



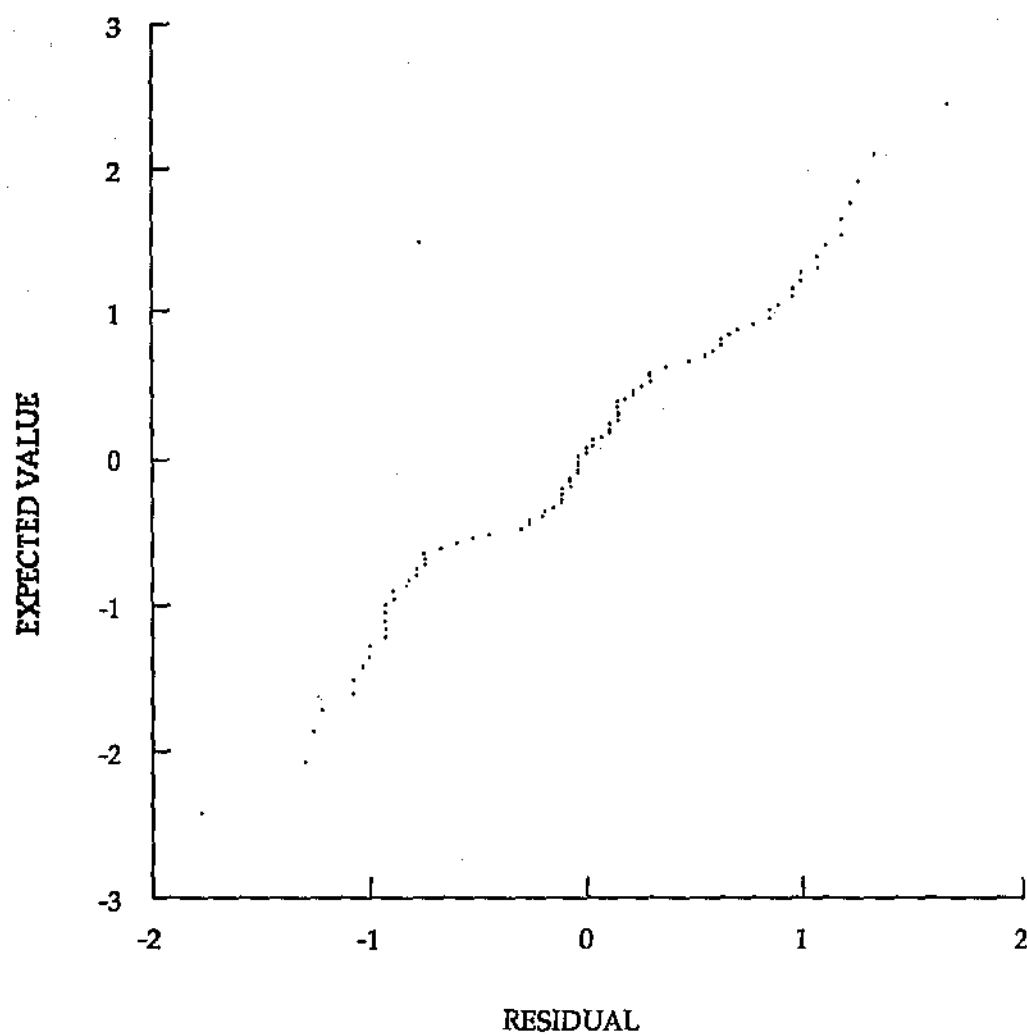
Normal Probability Plot for the Two-Way Interaction Between Budget Emphasis, Budgetary Participation for High Task Difficulty Subsample on Managerial Performance



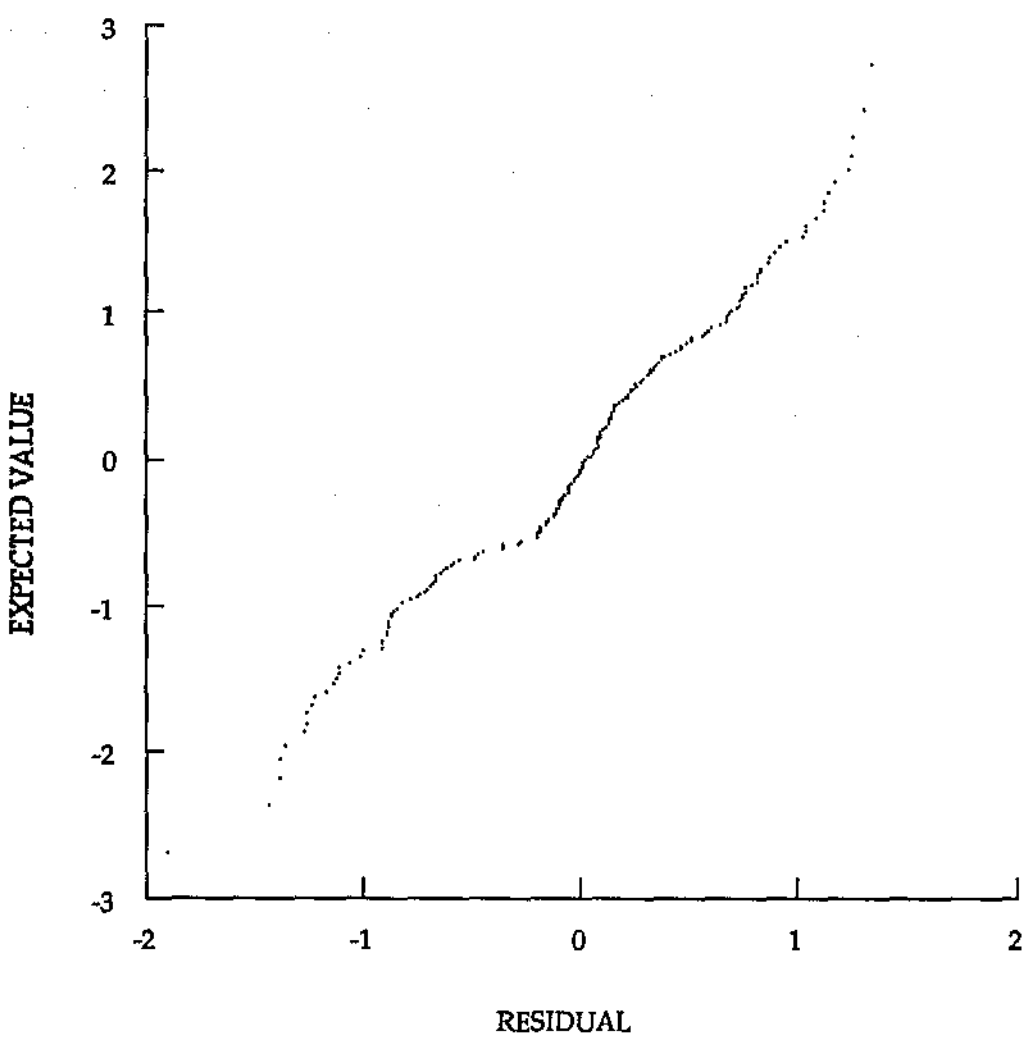
Normal Probability Plot Without Interaction for Budget Emphasis and Budgetary Participation
for Low Task Difficulty Subsample on Managerial Performance



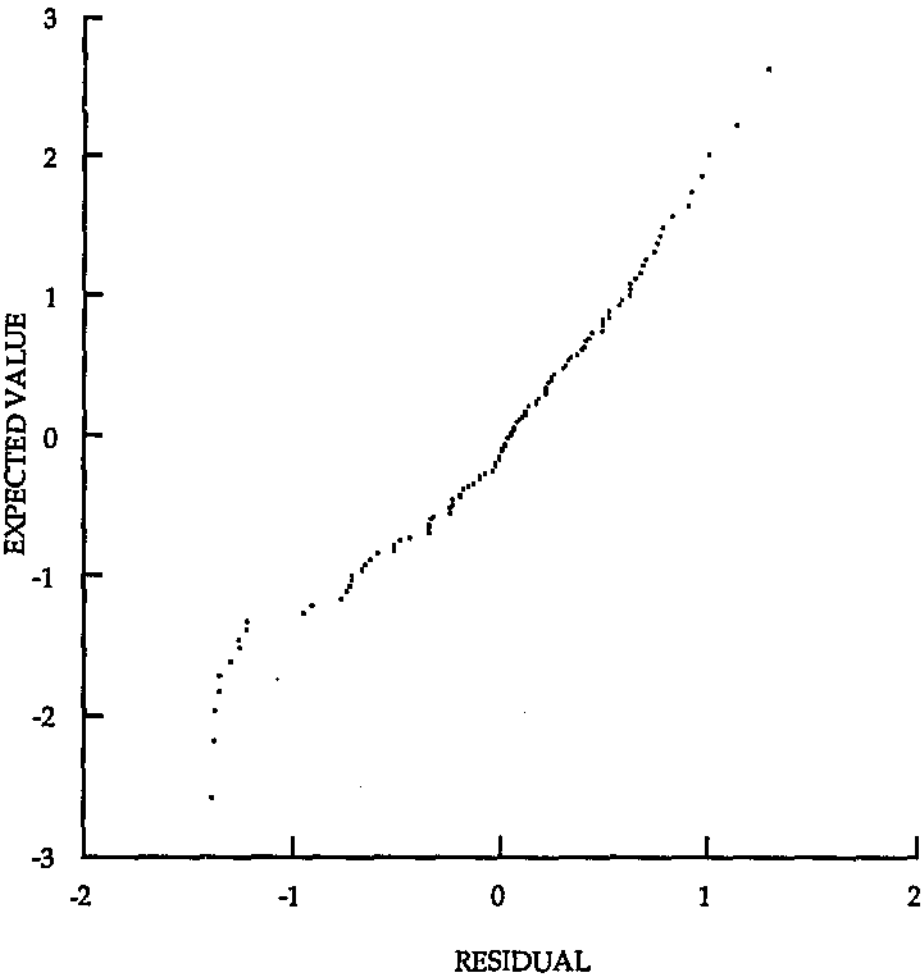
Normal Probability Plot Without Interaction for Budget Emphasis and Budgetary Participation
for High Task Difficulty Subsample on Managerial Performance



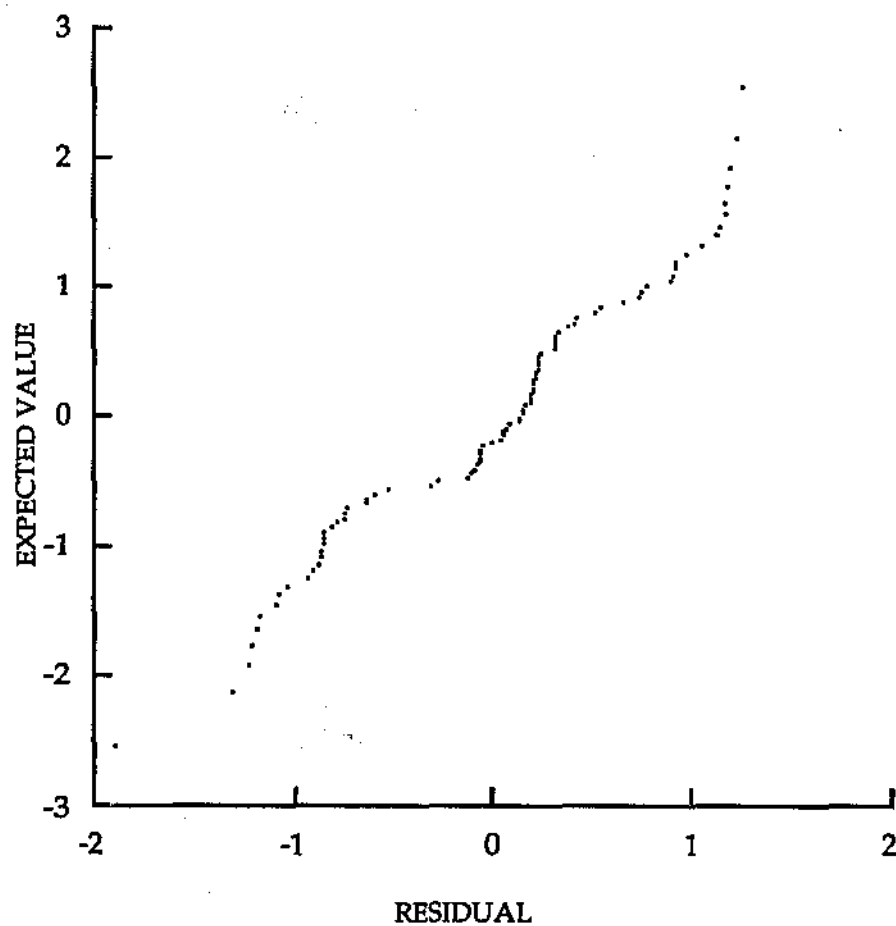
Normal Probability Plot for the Four-Way Interaction Between Budget Emphasis, Budgetary Participation, Task Difficulty and Culture on Managerial Performance



Normal Probability Plot for the Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Culture For Low Task Difficulty Subsample on Managerial Performance



Normal Probability Plot for the Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Culture for High Task Difficulty Subsample on Managerial Performance



Appendix E

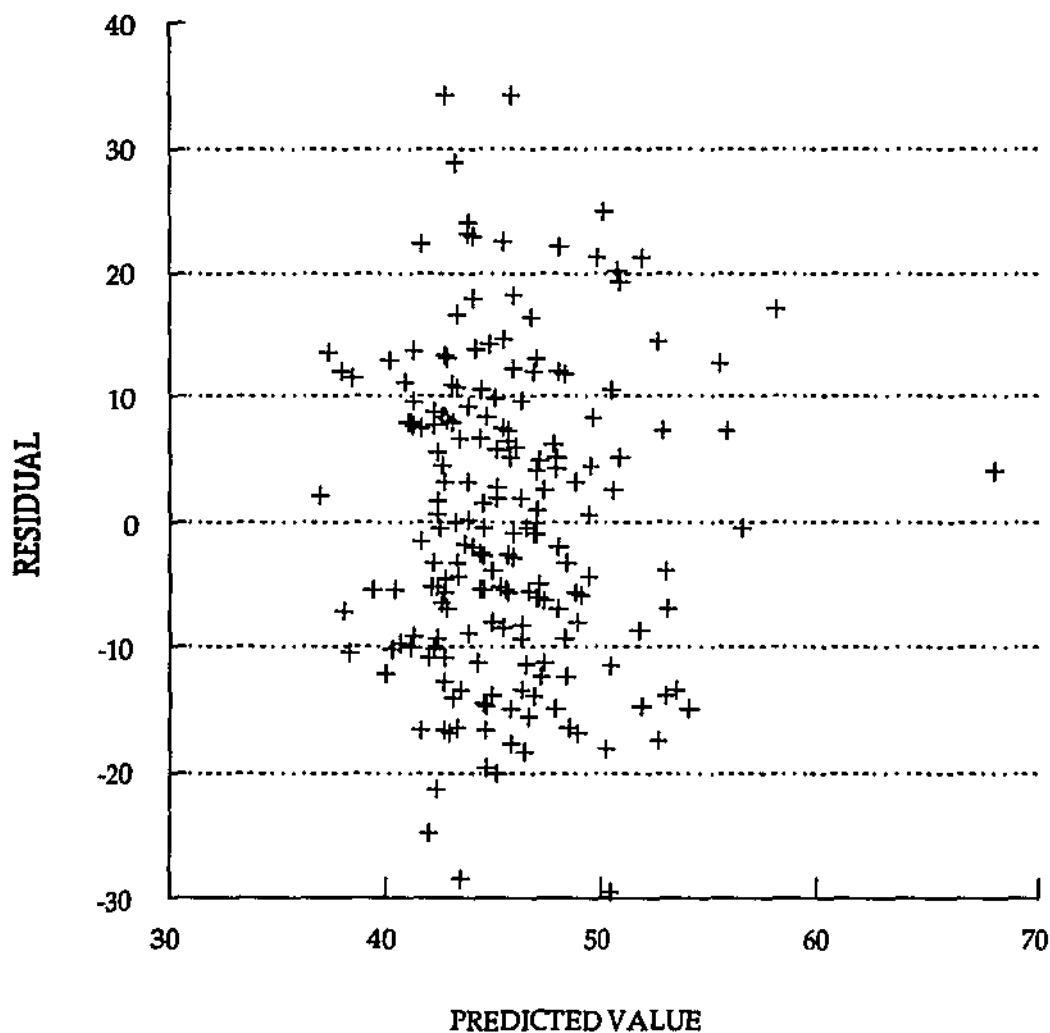
This appendix contains:

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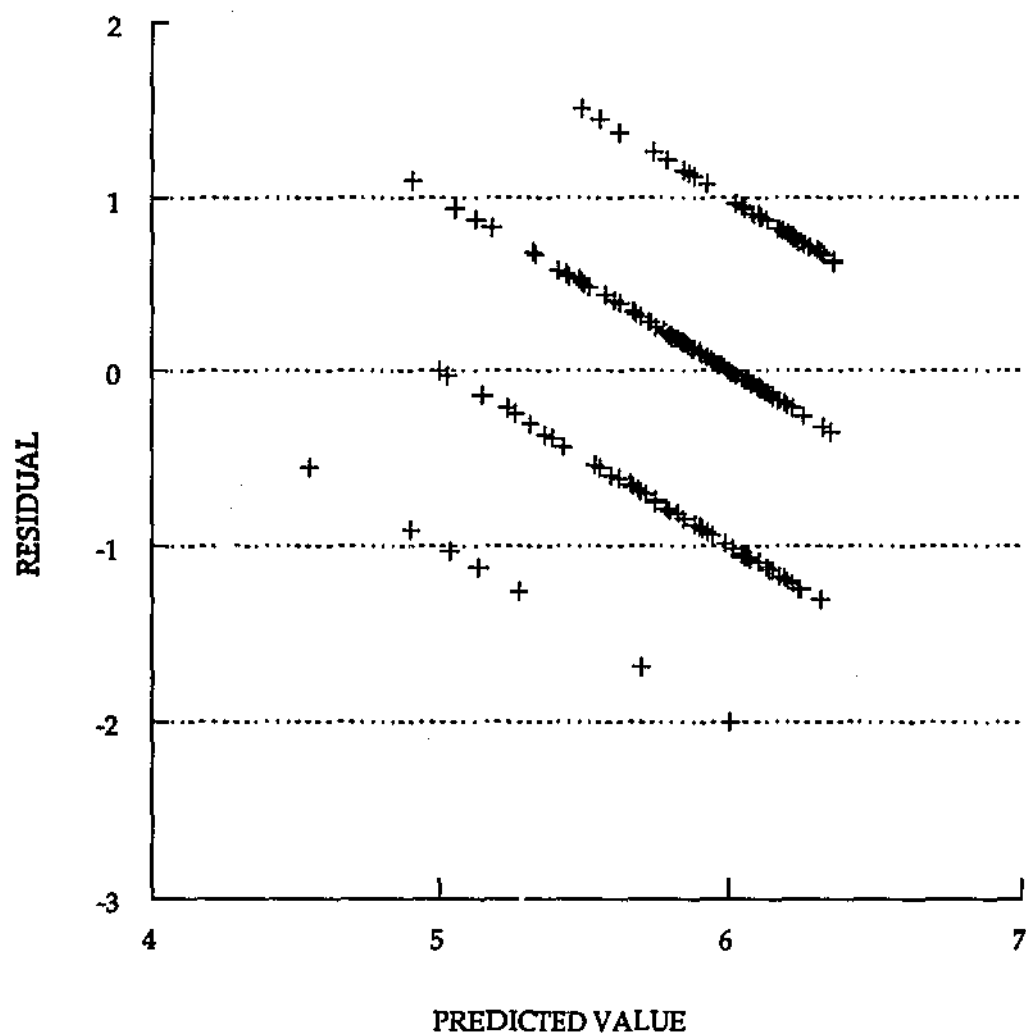
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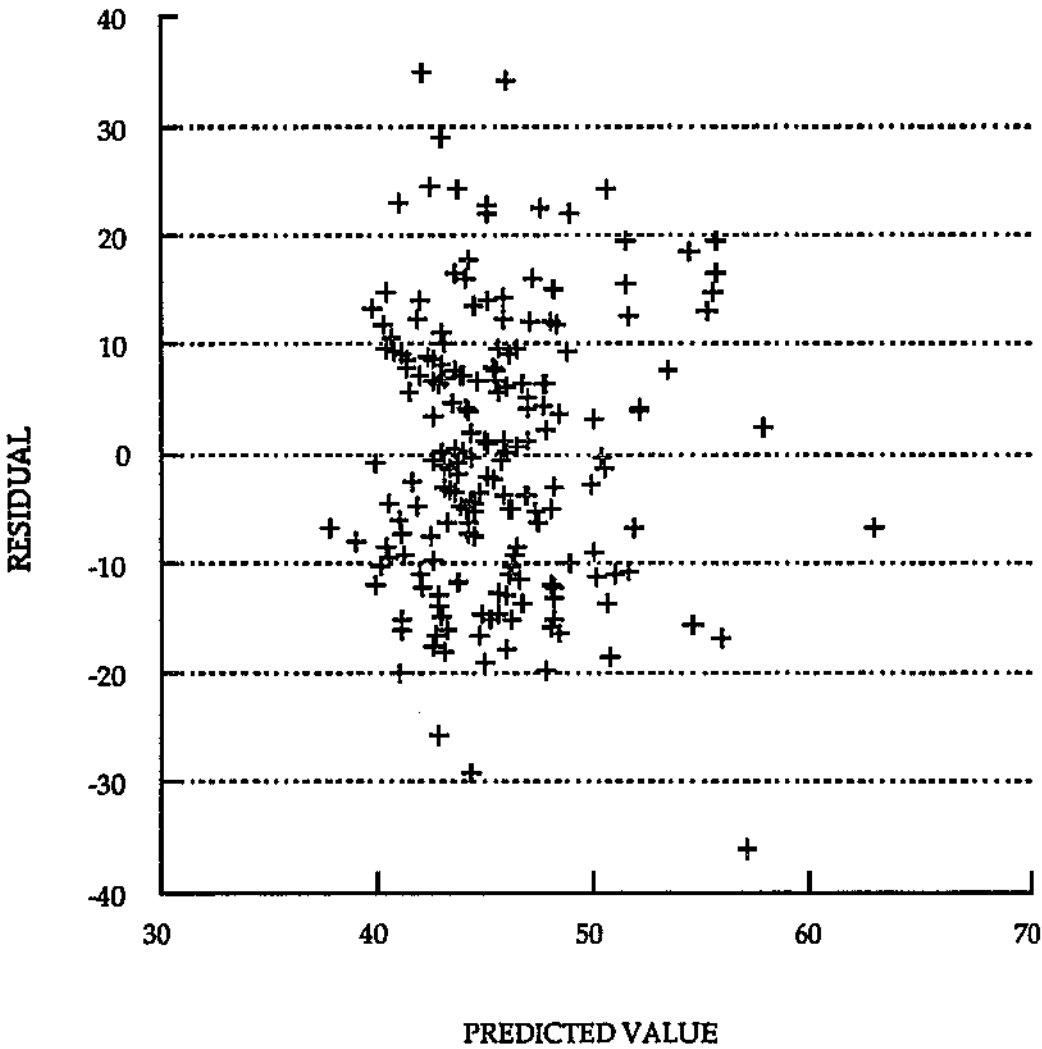
Plot of Residuals Against Predicted Value for the Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Task Uncertainty (Withey et al., 1983) on Job Related Tension



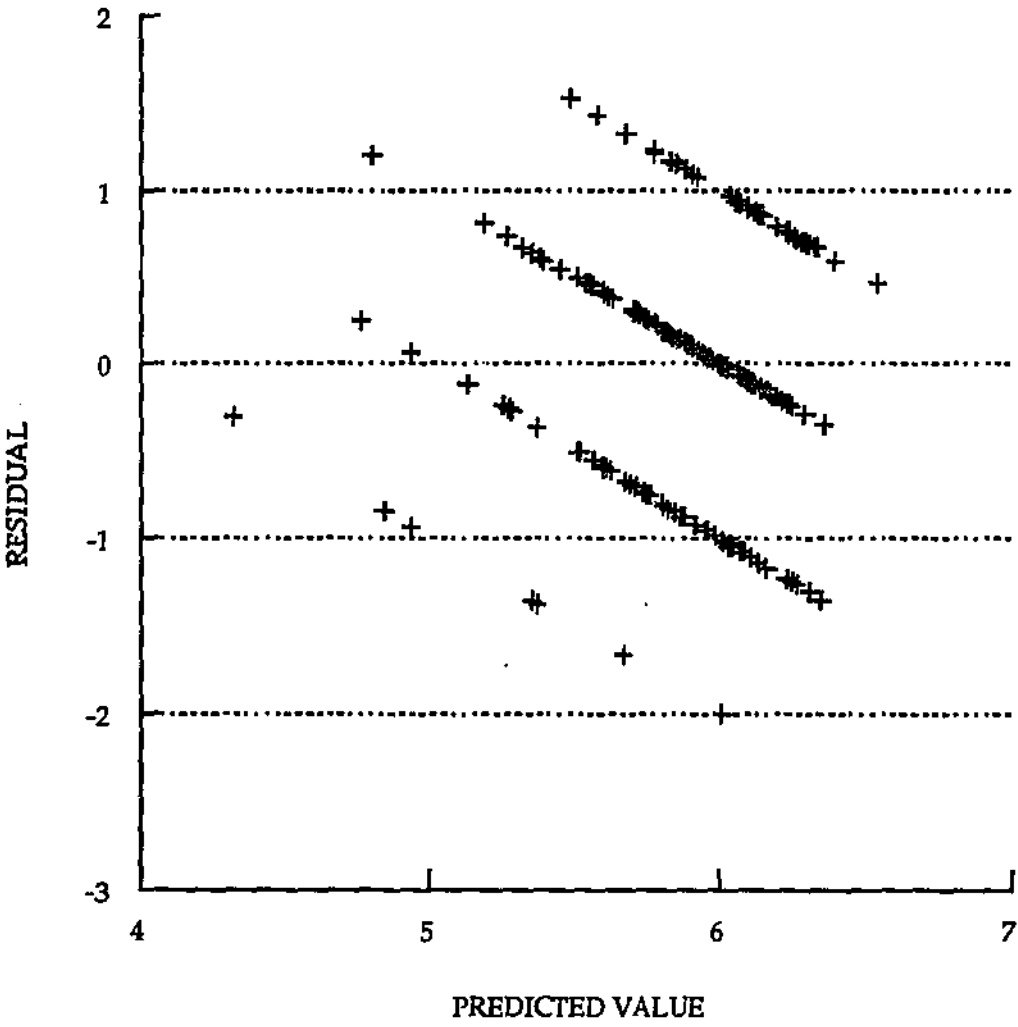
Plot of Residuals Against Predicted Value for the Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Task Uncertainty (Withey et al., 1983) on Managerial Performance



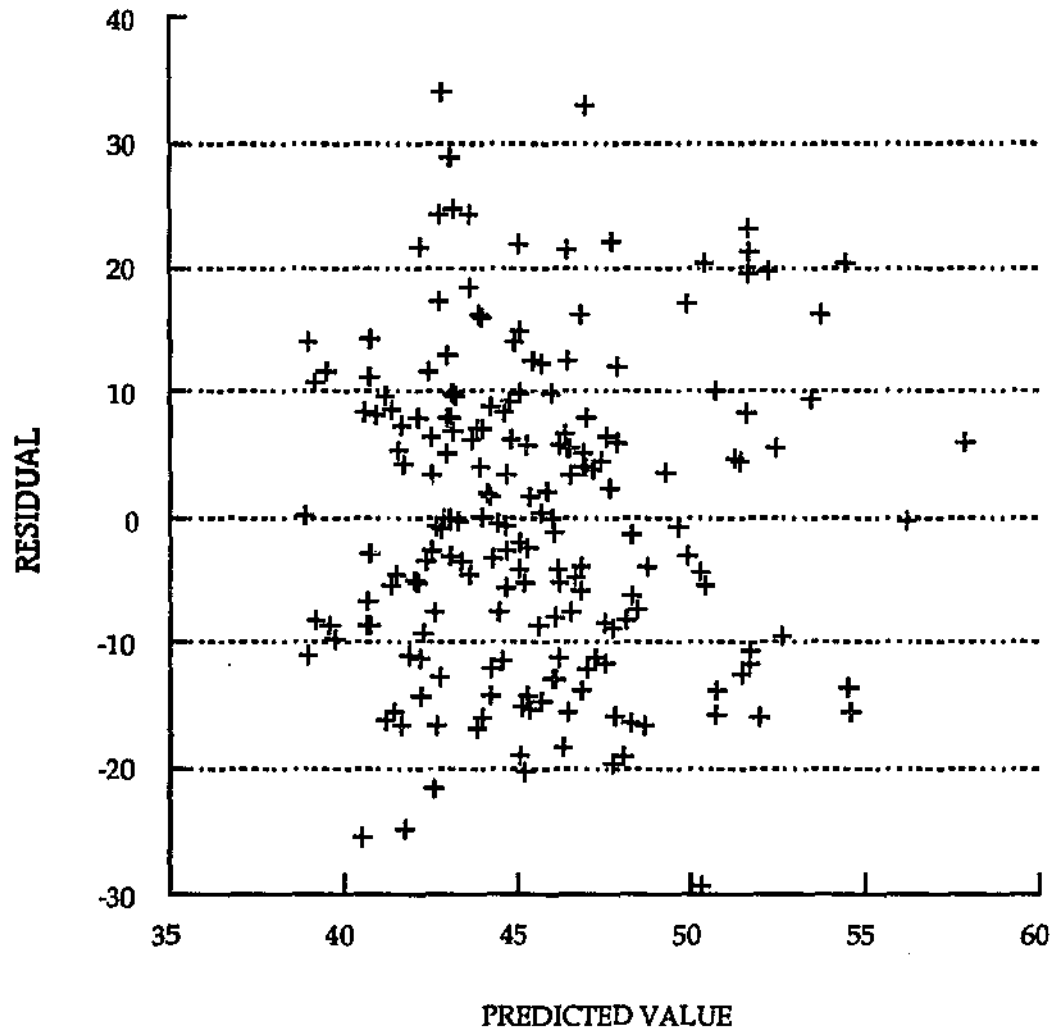
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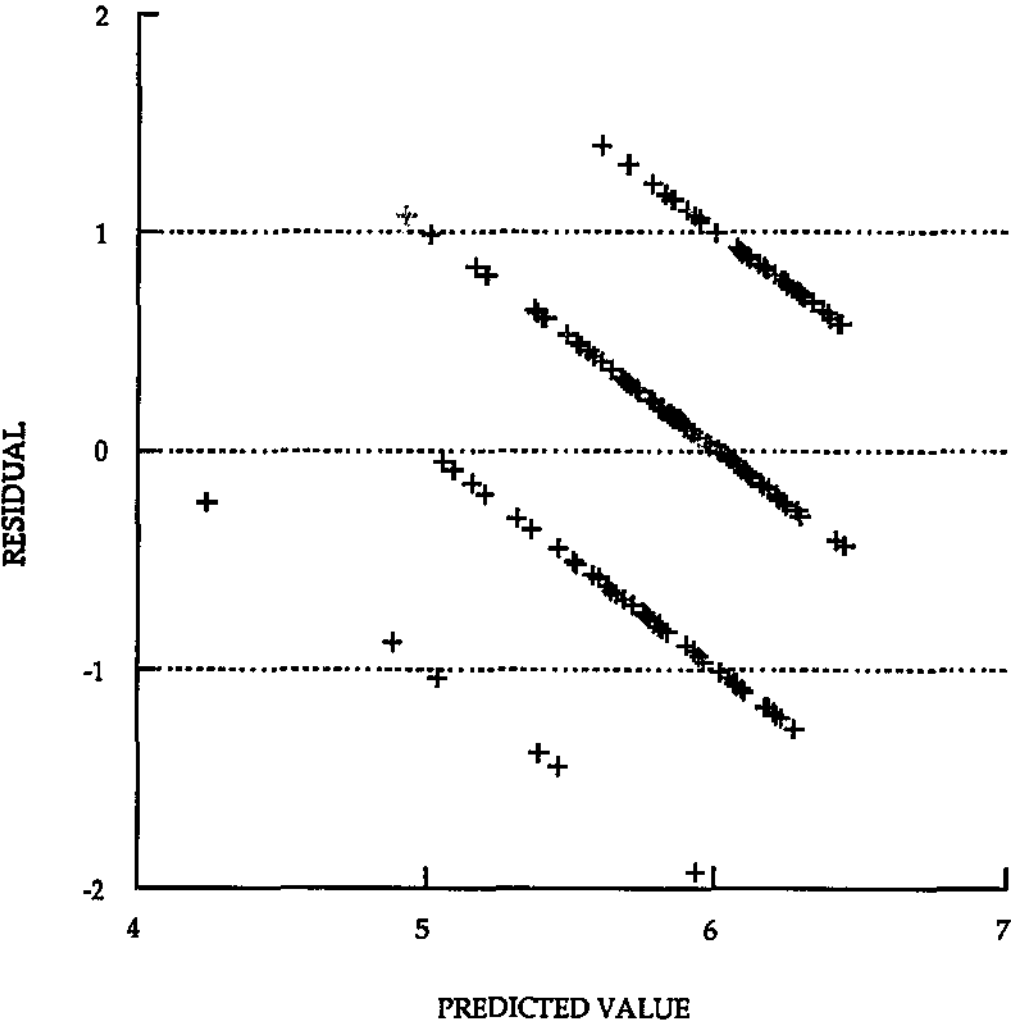
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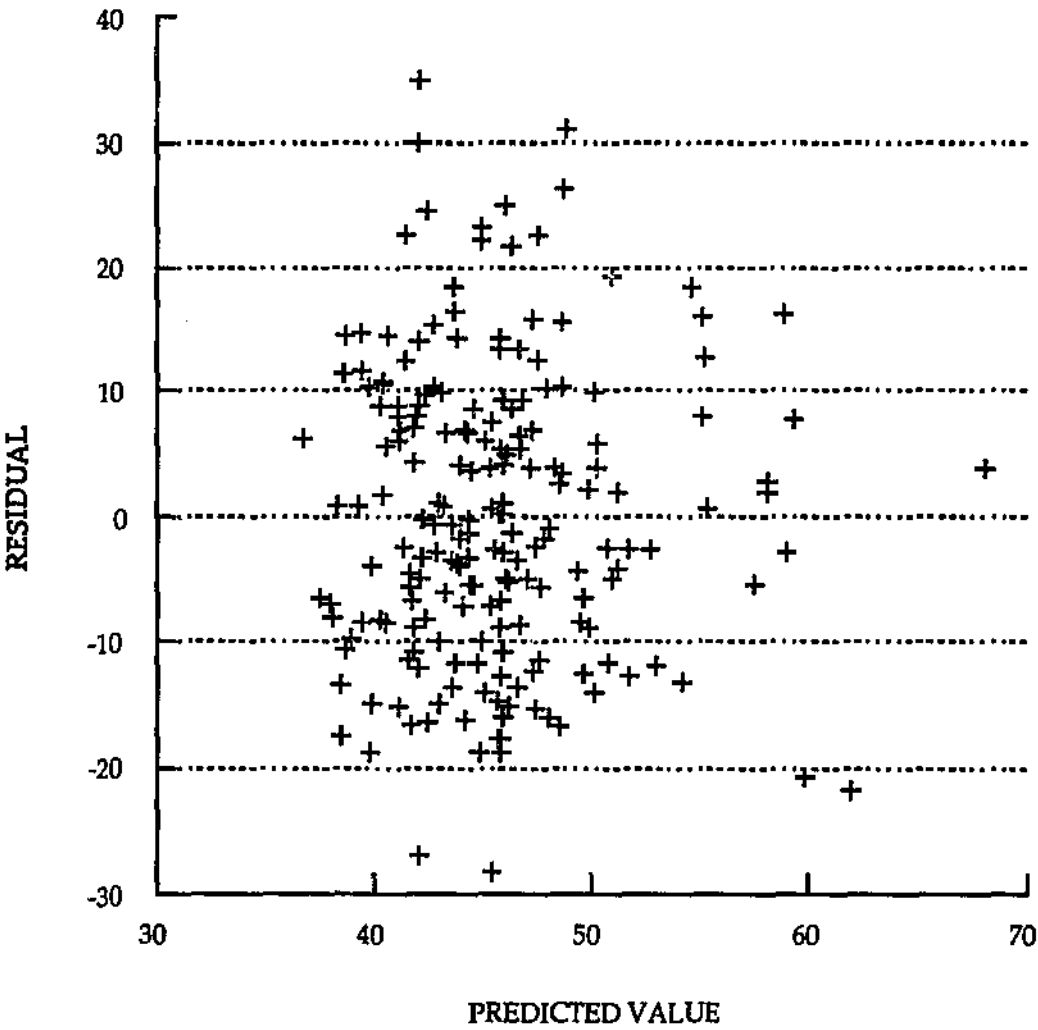
Plot of Residuals Against Predicted Values for The Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Task Variability (Van de Ven & Delbecq, 1974) on Job Related Tension



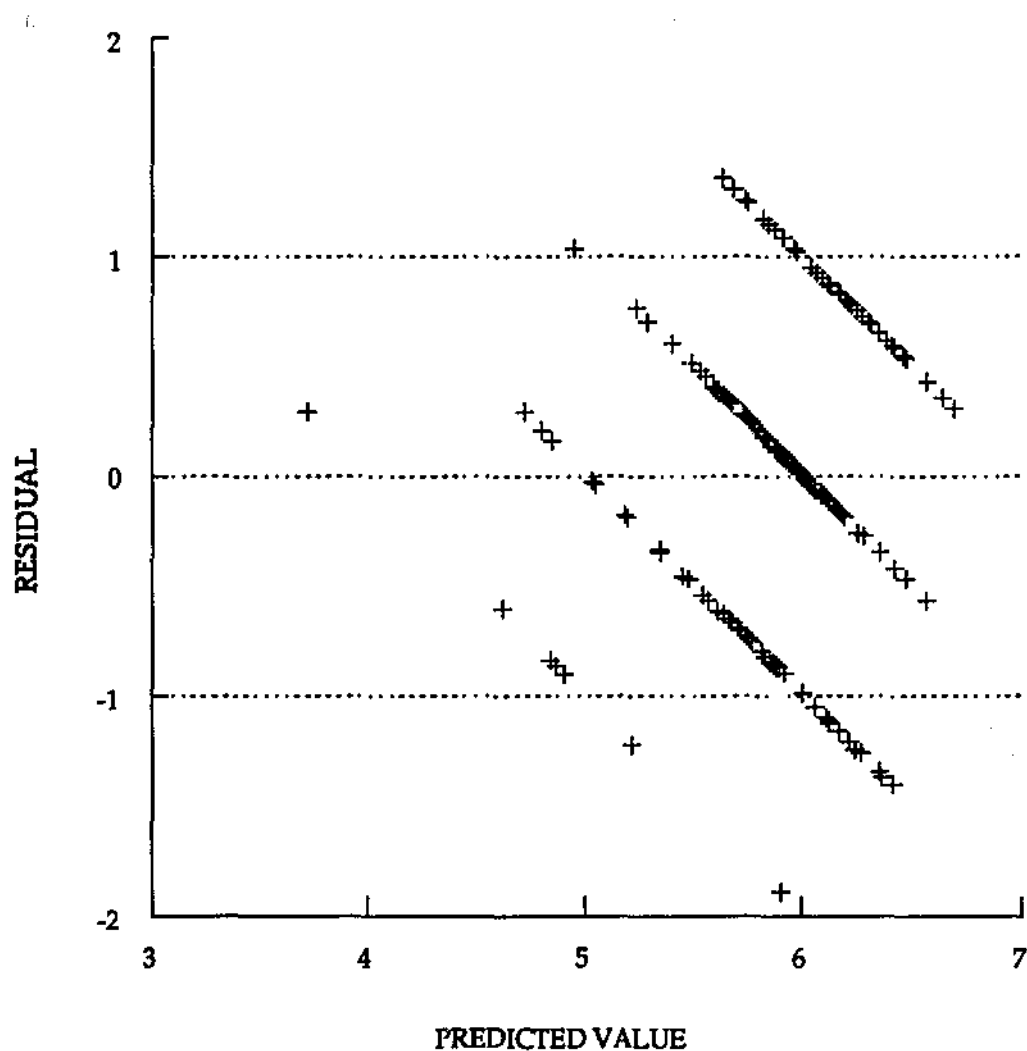
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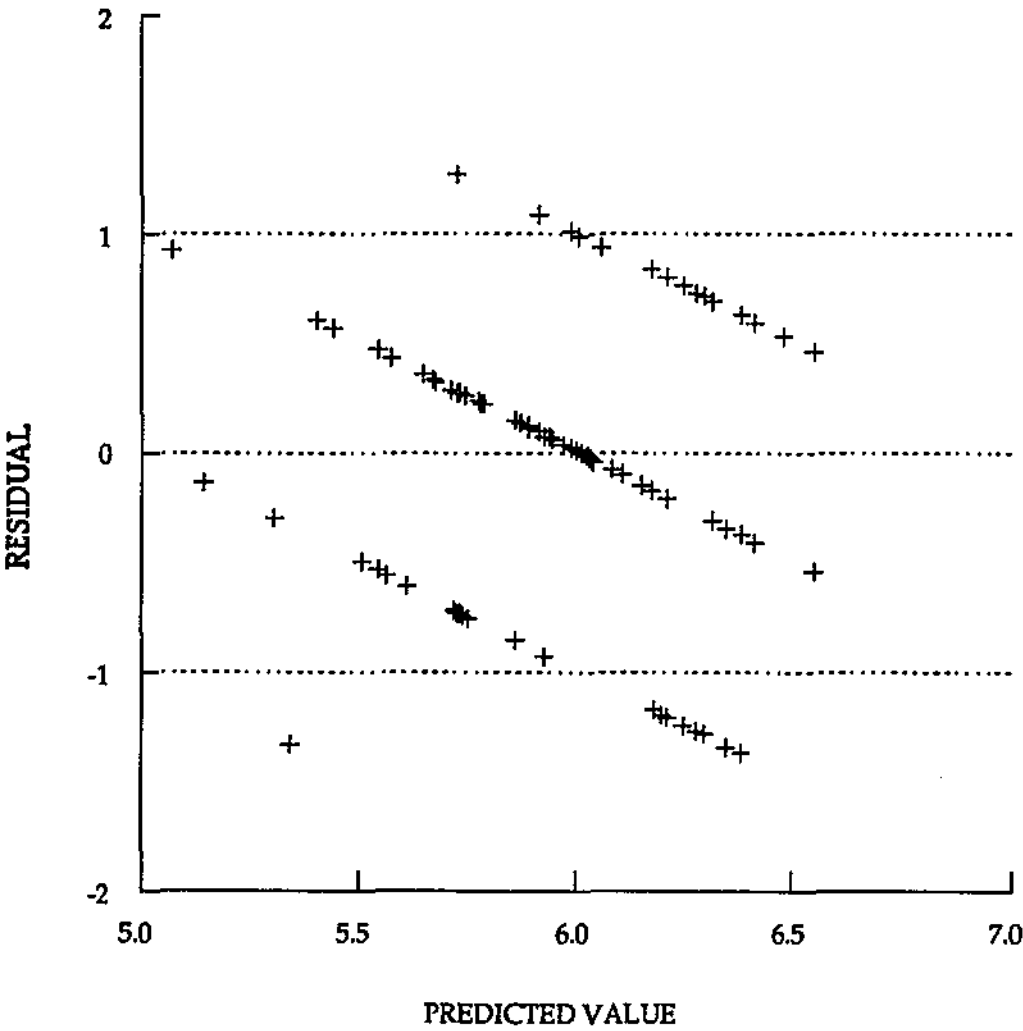
Plot of Residuals Against Predicted Values for The Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Task Difficulty (Van de Ven & Delbecq, 1974) on Job Related Tension



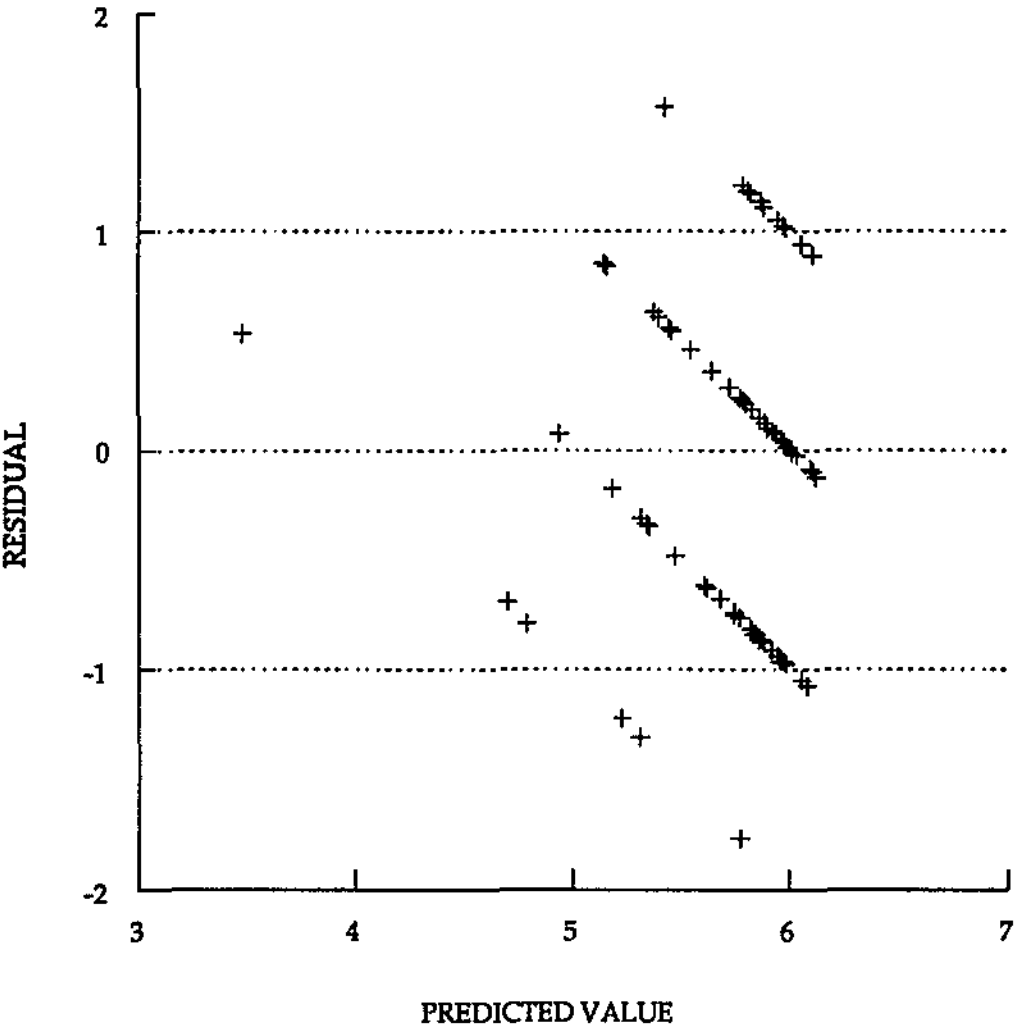
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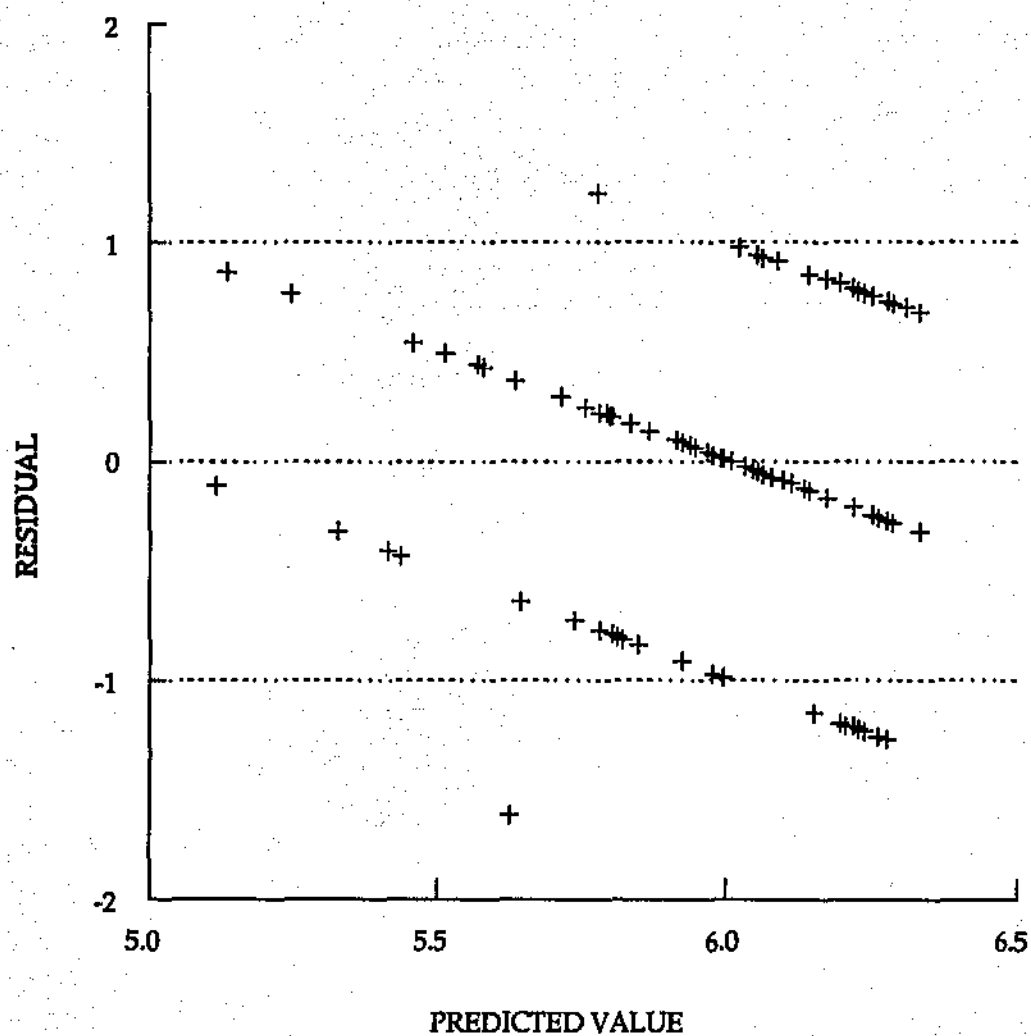
Plot of Residuals Against Predicted Values for the Two-Way Interaction Between Budget Emphasis, Budgetary Participation for Low Task Difficulty Subsample on Managerial Performance



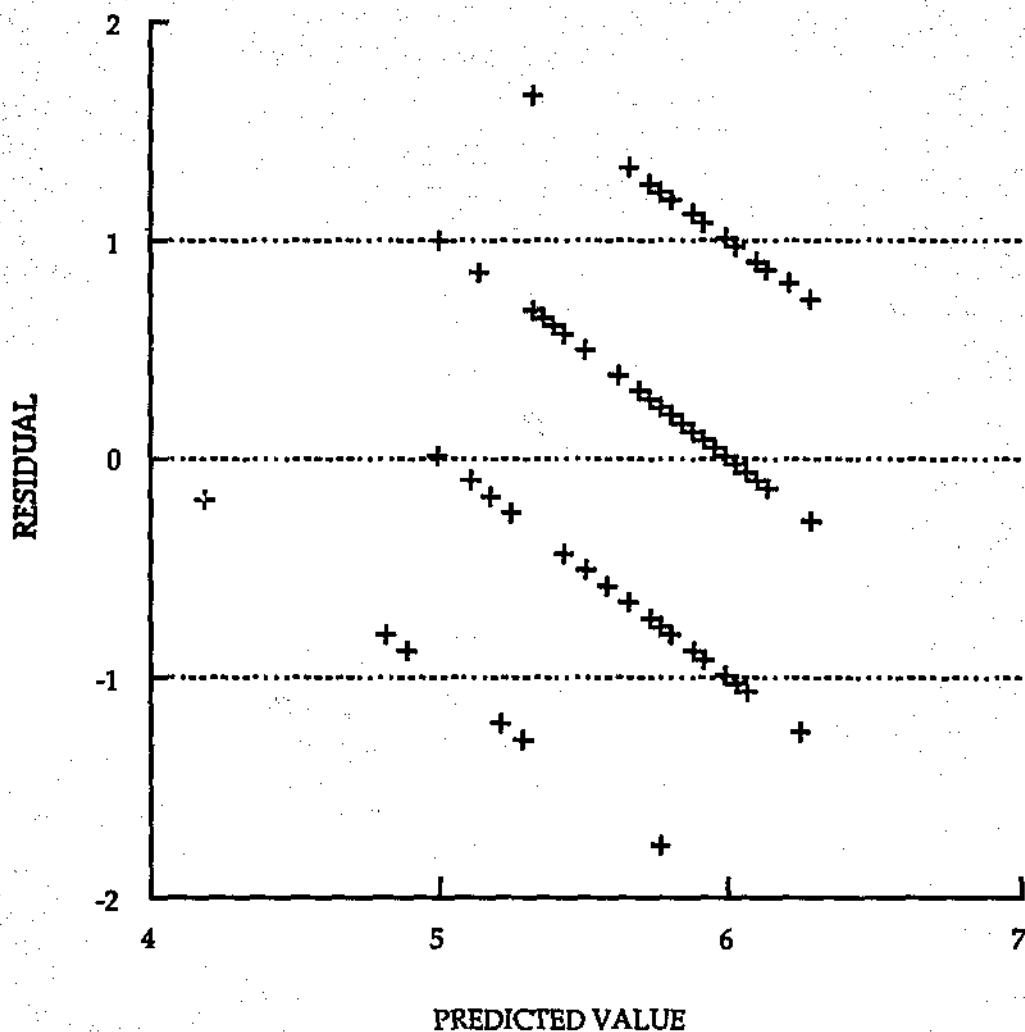
Plot of Residuals Against Predicted Values for the Two-Way Interaction Between Budget Emphasis, Budgetary Participation for High Task Difficulty Subsample on Managerial Performance



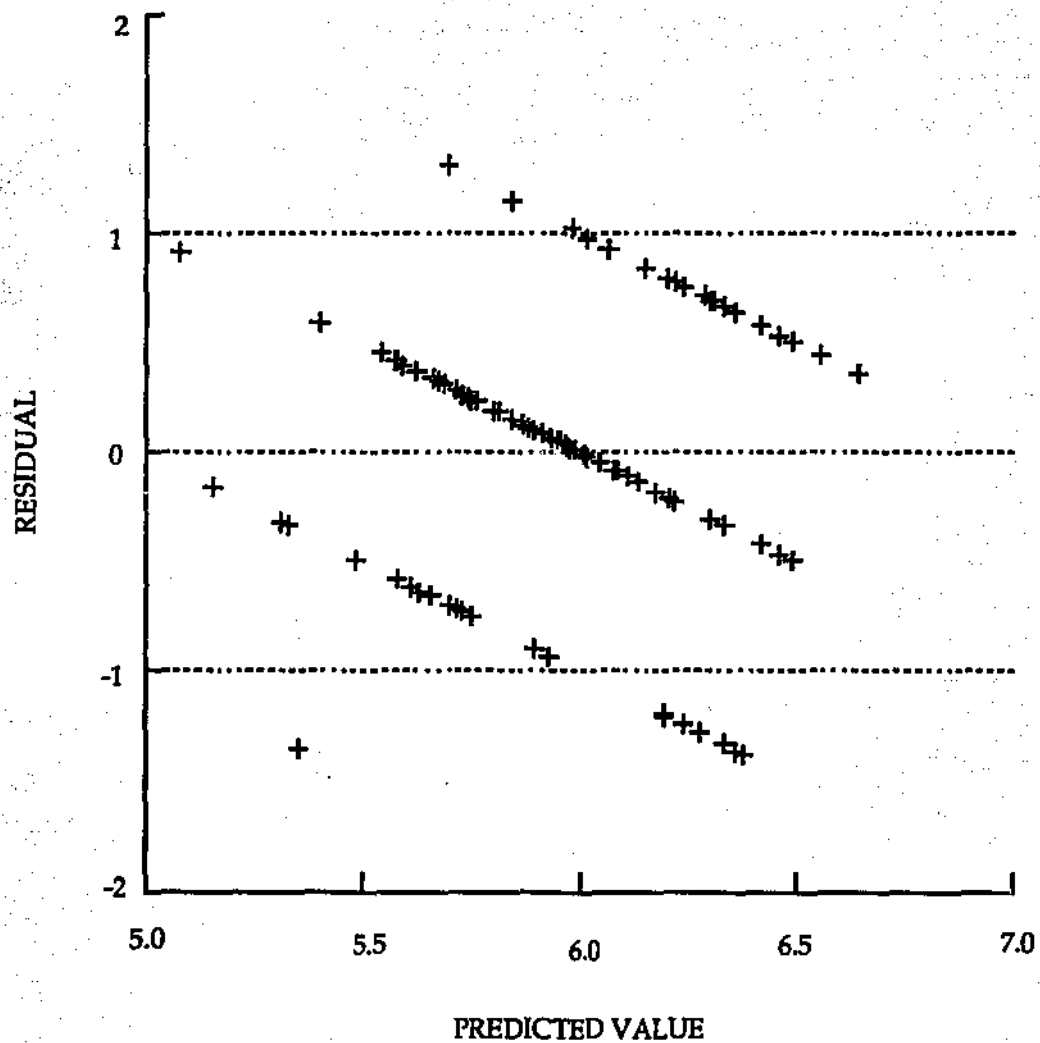
Plot of Residuals Against Predicted Values for Regression (Without Interaction) for Budget Emphasis and Budgetary Participation for Low Task Difficulty Subsample on Managerial Performance



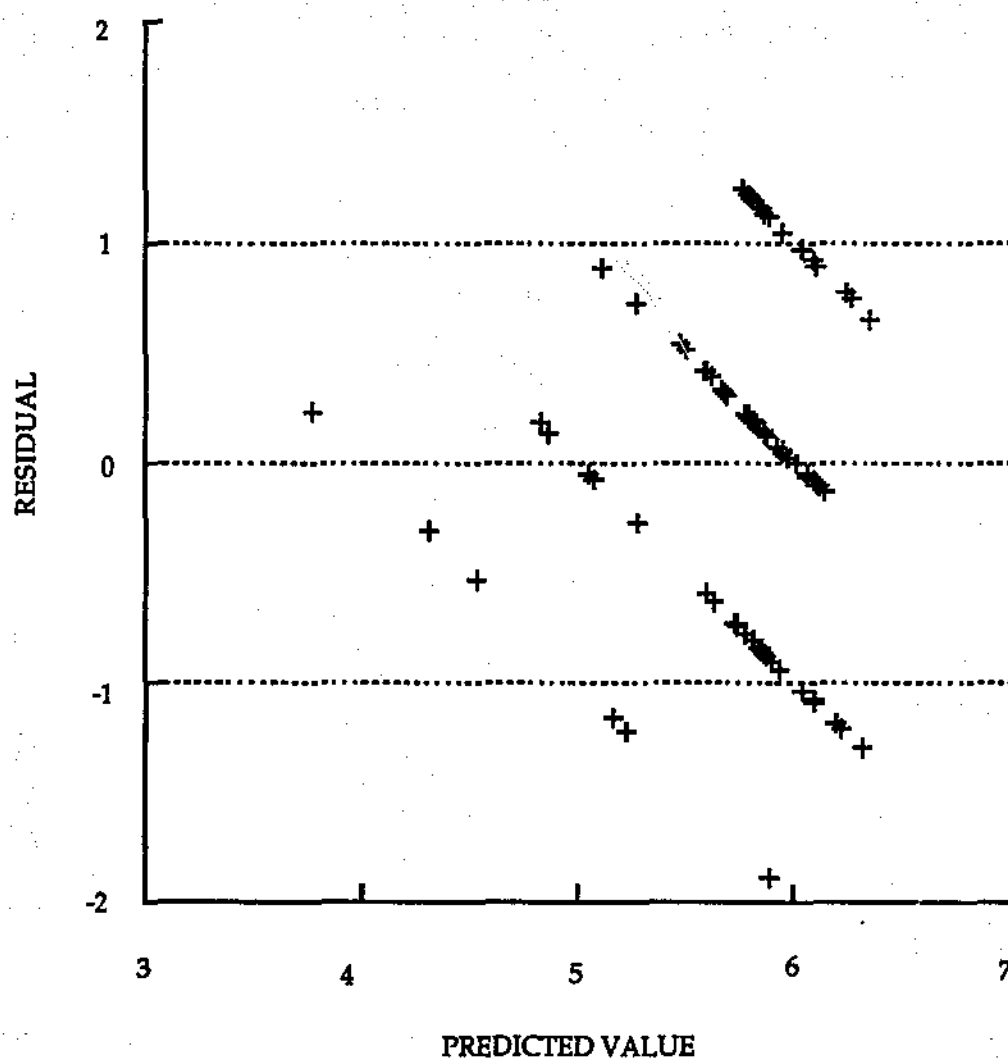
Plot of Residuals Against Predicted Values for Regression (Without Interaction) For Budget Emphasis And Budgetary Participation for High Task Difficulty Subsample on Managerial Performance



Plot of Residuals Against Predicted Values for The Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Culture for Low Task Difficulty Subsample on Managerial Performance



Plot of Residuals Against Predicted Values for The Three-Way Interaction Between Budget Emphasis, Budgetary Participation and Culture for High Task Difficulty Subsample on Managerial Performance



Appendix F

Results of fitting regression models to Hofstede's (1980) work goal data base to determine individualism index scores for Singapore and Western Australia

Regression (6 work goals)

Q.	Variable	Coefficient	Value	Std Error	t	p
	Intercept	b ₀	14.680	17.553	0.84	0.4090
80.	Personal time	b ₁	-41.562	7.450	-5.58	0.0000
84.	Training	b ₂	43.678	10.931	4.00	0.0003
81.	Challenge	b ₃	-24.587	13.438	-1.83	0.0763
83.	Freedom	b ₄	-26.298	12.722	-2.07	0.0466
82.	Physical conditions	b ₅	39.495	10.310	3.83	0.0005
85.	Use of skills	b ₆	26.511	14.990	1.77	0.0862

$R^2 = 0.93$, Adjusted $R^2 = 0.92$, $n = 40$, $F_{6,33} = 71.20$, Signif 0.0000

Note. From Reliance on accounting performance measures in superior evaluative style- the influence of national culture. Unpublished doctoral dissertation, Macquarie University, Sydney, New South Wales.